SONY

DIGITAL VIDEOCASSETTE RECORDER

DNW-A75/A75P

BETACAM SX

MAINTENANCE MANUAL Part 1

1st Edition (Revised 5)

Serial No. 10001 and Higher: DNW-A75

Serial No. 40001 and Higher: DNW-A75P

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

Attention-when the product is installed in Rack:

1. **Prevention against overloading of branch circuit**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

2. **Providing protective earth**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. **Internal air ambient temperature of the rack**
   When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. **Prevention against achieving hazardous condition due to uneven mechanical loading**
   When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ.
Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.
Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

Voor de klanten in Nederland

Dit apparaat bevat een $(CF)_n$-Li batterij voor memory back-up.

Raadpleeg uw leverancier over de verwijdering van de batterij op het moment dat u het apparaat bij einde levensduur afdankt.

Gooi de batterij niet weg. maar lever hem in als KCA.

Bij dit produkt zijn batterijen geleverd. Wanneer deze leeg zijn, moet u ze niet weggooien maar inleveren als KCA.

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Table of Contents

Manual Structure

Purpose of this manual 5
Contents 5
Related manuals 6
Trademarks 6

1. Installation

1-1. Installation Procedure 1-1
1-2. Supplied Accessories 1-1
1-3. Operating Conditions 1-2
1-4. Power Supply 1-2
1-4-1. Voltage and Power Requirements 1-2
1-4-2. Power Cord 1-2
1-5. Installation Space 1-3
1-6. Rack Mounting 1-4
1-7. Matching Connectors and Cables 1-9
1-8. Signal Inputs and Outputs 1-10
1-9. Switch Settings on Connector Panel 1-14
1-10. Switch and Shorting Plug Settings on PC Boards 1-15
1-10-1. APR-40 Board 1-15
1-10-2. AU-260 Board 1-19
1-10-3. DM-89 Board 1-20
1-10-4. TBC-23A Board 1-21
1-10-5. SS-83 Board 1-22
1-11. Switching Search Dial Mode 1-24
1-12. Reference System 1-25
1-13. Settings and Adjustment when External Equipment is Connected 1-26
1-13-1. Settings for Time Code 1-26
1-13-2. VTR Constant Values Settings of Editor 1-26
1-13-3. System Phase Alignment 1-27
1-13-4. Setup Menu Settings 1-27

2. Service Overview

2-1. Notes on Power Supply Block 2-1
2-1-1. Warning on Primary Circuit Block and Electric Shock 2-1
2-1-2. Note on Resetting the Circuit Breaker 2-1
2-2. Cleaning when the Heads are Clogged 2-1
2-3. Removing/Reattaching Cabinet 2-2
2-3-1. Upper Lid, Side Panels, and Bottom Plate 2-2
2-3-2. Control Panels 2-3
2-3-3. Connector Panel Assembly 2-4
2-3-4. Power Supply Panel Assembly 2-5
2-4. Removing/Reattaching Plate MD Assembly 2-5
2-5. Removing/Reattaching Cassette Compartment 2-6
2-6. Removing/Reattaching Lower Control Panel Assembly 2-7
2-7. Circuit Function 2-8
2-8. Location of Main Parts 2-10
2-8-1. Printed Circuit Boards and Power Supply Unit Locations 2-10
2-8-2. Main Mechanical Part Locations 2-13
2-9. Function and Location of Sensors 2-14
2-10. System of Cassettes 2-16
2-11. Function of LEDs on Circuit Boards 2-18
2-12. Taking Out the Cassette in Tape Slacking 2-22
2-13. Removing/Reattaching Plug-in Boards 2-23
2-14. Fixtures and Adjustment Equipment List 2-24
2-14-1. Fixtures 2-24
2-14-2. Equipment for Adjustment 2-26
2-15. ISR 2-27
2-16. Battery for Memory Backup 2-28
2-17. Setup Menu (F-Series) 2-29
2-17-1. Menu Operation 2-29
2-17-2. F-Series Items 2-30

3. Error Message

3-1. Overview of Error Message 3-1
3-2. Details of Error Messages 3-3

4. Maintenance Mode

4-1. Overview of Maintenance Mode 4-1
4-2. TAPE Maintenance Mode (M0) 4-6
4-2-1. Overviews 4-6
4-2-2. SERVO CHECK Mode (C00-03) 4-14
4-2-3. ANALOG DT CHECK Mode (C04) 4-29
4-2-4. RF CHECK Mode (C1) 4-30
4-2-5. AUDIO/VIDEO CHECK Mode (C2) 4-37
4-2-6. BETACAM PB CHECK Mode (C3) 4-44
4-2-7. SERVO ADJUST Mode (A00-01) 4-46
4-2-8. ANALOG DT ADJUST Mode (A02) 4-53
4-2-9. RF ADJUST Mode (A1) 4-58
4-2-10. AUDIO/VIDEO ADJUST Mode (A2) 4-66
4-2-11. BETACAM PB ADJUST Mode (A3) 4-75
4-2-12. MECHANISM ADJUST Mode (A4) 4-78
4-3. Error Logger Display Mode (M2) 4-79
4-3-1. Outline 4-79
4-3-2. Display Mode 4-80
4-3-3. Setting Mode 4-82
4-4. OTHERS CHECK Mode (M3) 4-84
4-4-1. Outline 4-84
4-4-2. ROM VERSION Display Menu (M30) 4-85
4-4-3. SERIAL NUMBER Display Menu (M31) 4-85
4-4-4. RS-232C STATUS Display Menu (M32) 4-86
4-4-5. MEMORY CHECK Display Menu (M35) 4-87
4-4-6. HOUR METER RESET Menu (M36) 4-87
4-4-7. METER HEAD ROOM Setup Menu (M37) 4-88
4-4-8. 50PIN DATA ASSIGN Mode (M39) 4-88

5. Periodic Maintenance and Inspection

5-1. Periodic Maintenance 5-1
5-1-1. Index 5-1
5-1-2. Periodic Replacement and Check Item Table 5-2
5-1-3. Hours Meter 5-4
5-2. Cleaning 5-5
5-2-1. Cleaning using Cleaning Tape 5-5
5-2-2. General Information for Cleaning using Cleaning Cloth 5-5
5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning 5-7
5-2-4. Tape Running Surface of Lower Drum and Lead Surface Cleaning 5-8
5-2-5. Stationary Heads Cleaning 5-9
5-2-6. Tape Running System and Tape Cleaner Cleaning 5-10
5-2-7. Fan Motors Cleaning 5-11
5-2-8. Cassette Compartment and Cassette Supports Cleaning 5-12
5-3. Video Head Tip Protrusion Check 5-13
5-3-1. Head Tip Protrusion Measurement 5-13
5-3-2. Brush Slip Ring Assembly Removal/Reinstallation 5-16

6. Spare Parts

6-1. Notes on Repair Parts 6-1
6-2. Exploded Views 6-2
6-3. Plug-in Boards 6-4
6-4. Packing Materials and Supplied Accessories List 6-5
6-5. Power Cords List 6-5
6-6. Fixtures List 6-6

Appendix A Outline of Format

A-1. Outline A-1
A-2. Recording Format A-1
A-3. Head Configuration A-5
A-4. Signal Processing A-6
A-4-1. Compression System of Video Signal A-6
A-4-2. Outline of Signal Processing A-6

Appendix B Setting Check Sheet

Appendix C Circuit Description and Overall Block Diagram

Manual Structure

Purpose of this manual

This manual is the maintenance manual part 1 of digital videocassette recorder DNW-A75/A75P.
This manual is intended for use by trained system and service engineers, and provides the information that is required to install and maintenance information.

Contents

This manual is organized by following sections.

Section 1 Installation
Explains the information that is required to install (environment, connection information, initial setting, etc.).

Section 2 Service Overview
Explains fundamental area of the information that is required to service, (removal of cabinet and cassette compartment, the functions of printed circuit board, the locations of main part, fixture and measuring equipment information, notes, etc.), the measures against trouble and ISR (Interactive Status Reporting).

Section 3 Error Message
Explains the error messages.

Section 4 Maintenance Mode
Explains each menu of the maintenance mode.

Section 5 Periodic Maintenance and Inspection
Explains the recommended periodic maintenance, the cleaning procedure and the video head tip protrusion check procedure.

Section 6 Spare Parts
Describes the spare parts list and the exploded view for the service parts of this unit, and the packing materials and supplied accessories list.

Appendix A Outline of Format
Explains the Betacam SX format and the head configuration.

Appendix B Setting Check Sheet
The sheet is used for checking the setup conditions such as switch, setup menu under the application.

Appendix C Circuit Description and Block Diagram
Describes the circuit description and overall block diagram.

Related manuals

Besides this “maintenance manual part 1”, the following manuals are available for digital videocassette recorder DNW-A75/A75P.
If these manuals are required, please contact your local Sony Sales Office/Service Center.

- **Operation Manual (Supplied with the DNW-A75/A75P.)**
  This manual is necessary for application and operation (and installation) of the DNW.

- **Maintenance Manual Part 2 (Available on request)**
  Volume-1 : Service Instruction
  Volume-2 : Parts List
  Volume-3 : Diagrams

  These manuals describe the information that premises the parts level service (adjustments, board layouts, schematic diagrams, detailed parts list, etc.) for this unit.

- **Protocol Manual of Remote (9-pin) Connector (Available on request)**
  This manual explains the protocol for controlling the VTR via the RS-422A (9-pin serial remote).

- **Interface Manual of Parallel I/O (50-pin) Connector (Available on request)**
  This manual explains the protocol for controlling the VTR via the parallel (50-pin).

- **ISR Protocol Manual (Available on request)**
  This manual explains the ISR function (Interactive Status Reporting / Integrated Equipment Management Function).

- **“Semiconductor Pin Assignments” CD-ROM (Available on request)**
  This “Semiconductor Pin Assignments” CD-ROM allows you to search for semiconductors used in this unit.
  Semiconductors that cannot be searched for on this CD-ROM are listed in the maintenance manual part 2 (volume-3) for the corresponding unit. The maintenance manual part 2 (volume-3) contains a complete list of all semiconductors and their ID Nos., and thus should be used together with the CD-ROM.
  Part number: 9-968-546-XX

Trademarks

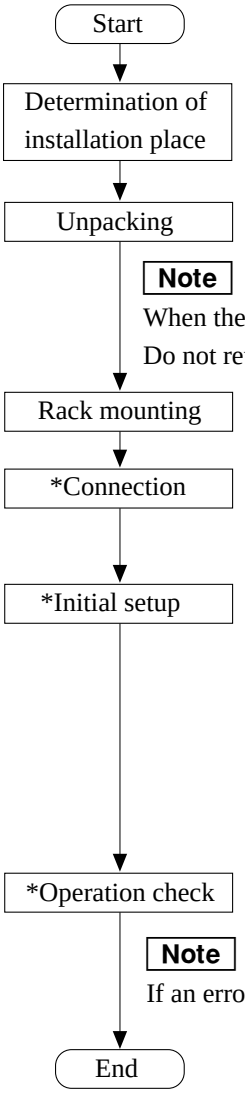
Trademarks and registered trademarks used in this manual are follows.

• DOLBY is a trademark of Dolby Laboratories Licensing Corporation.

Section 1
Installation

1-1. Installation Procedure

Installation procedure of this unit is shown on the following flowchart.
Refer to each section about detail of each flow.
The operation manual is also required to do ∗-marked flow.



1-3. Operating Conditions
1-4. Power Supply
1-5. Installation Space

Note

When the unit is transported, it is required to pack the unit into the specified new packing materials.
Do not reuse the packing materials.

1-6. Rack Mounting

1-7. Matching Connectors and Cables
1-8. Signal Inputs and Outputs

1-9. Switch Settings on Connector Panel
1-10. Switch and Shorting Plug Settings on PC Boards
1-11. Switching Search Dial Mode
1-12. Reference System
1-13. Settings and Adjustment when External Equipment is Connected

Note

If an error message appears on the time data display area, refer to “3. Error Message”.

1-2. Supplied Accessories

Screws for rack mounting (PSW 4 × 16) 4
Operation manual 1
Maintenance manual (Part 1) 1

1-3. Operating Conditions

CAUTION

Good air circulation is essential to prevent internal heat build-up. Place the unit in location with sufficient air circulation.
Do not block the ventilation holes of the cabinet and the front and rear panels.

Operating temperature: 5°C to 40°C
Operating humidity: 25% to 80% (non-condensing)
Storage temperature: −20°C to 60°C
Locations to avoid:

- Areas where the unit will be exposed to direct sunlight of any other strong lights.
- Areas near heat sources.
- Dusty areas or areas subject to vibration.
- Areas with strong magnetic field.
- Areas with much electrical noise.
- Areas with much static electricity.
- Areas that is impossible to find a specified room for installation. (Refer to “1-5. Installation Space”.)
- Areas windtight.

Tilt allowance: Within 30° (Do not slant the front and rear of the unit more than 30°.)

CAUTION

Fix the unit securely to avoid drop when the unit is operated at not-horizontal place.

1-4. Power Supply

1-4-1. Voltage and Power Requirements

This unit’s power line has a switching regulator.

CAUTION

Be sure to operate the unit within the range of following power voltage.

Power voltage: AC 100 to 240 V ±10%
Power frequency: 50 Hz or 60 Hz
Power consumption: 215 VA
Rush current: Power voltage 100 V IN; 10 A
Power voltage 240 V IN; 20 A

Note

AC power supply is required a capacity which is commensurate with rush current.
If the capacity of the AC power supply is not enough, the breaker of AC power of a supply side may operate or this unit may not operate normally.

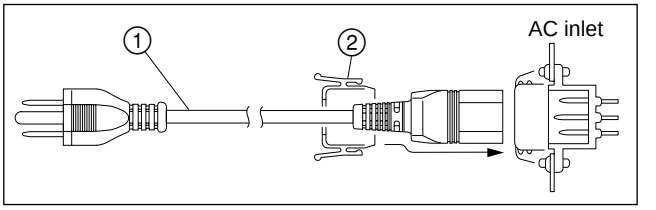
1-4-2. Power Cord

This unit does not come with a power cord.
To get a power cord, please contact your local Sony Sales Office/Service Center.

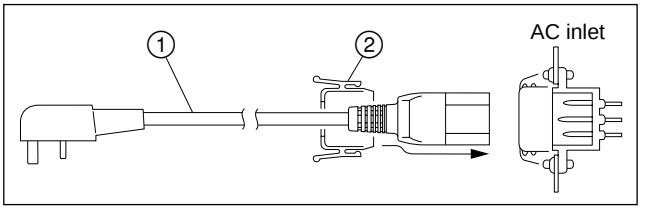
WARNING

Use the specified power cord only when connecting the AC power.
Never use a injured power cord.

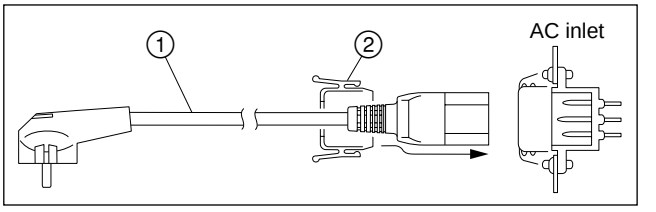
For customers in the U.S.A. and Canada:
① Power cord 125 V 10 A (2.4 m): ⚠1-557-377-11
② Plug holder (Brown): 3-613-640-01



For customers in the United Kingdom:
① Power cord 250 V 10 A (2.4 m): ⚠1-782-165-11
② Plug holder (Brown): 3-613-640-01



For customers in European countries except the United Kingdom:
① Power cord 250 V 10 A (2.4 m): ⚠1-782-164-11
② Plug holder (Brown): 3-613-640-01



If the unit is used in the area except above, please contact your local Sony Sales Office/Service Center.

1-5. Installation Space

When installing, the installation space must be secured in consideration of the ventilation and service operation.

- Do not block the ventilation slots (at the upper lid, right side panel, and bottom plate), and vents of the fans.
- Leave a space around the unit for ventilation.
- Leave more than 40 centimeters of space in the rear of the unit to secure the operation area.

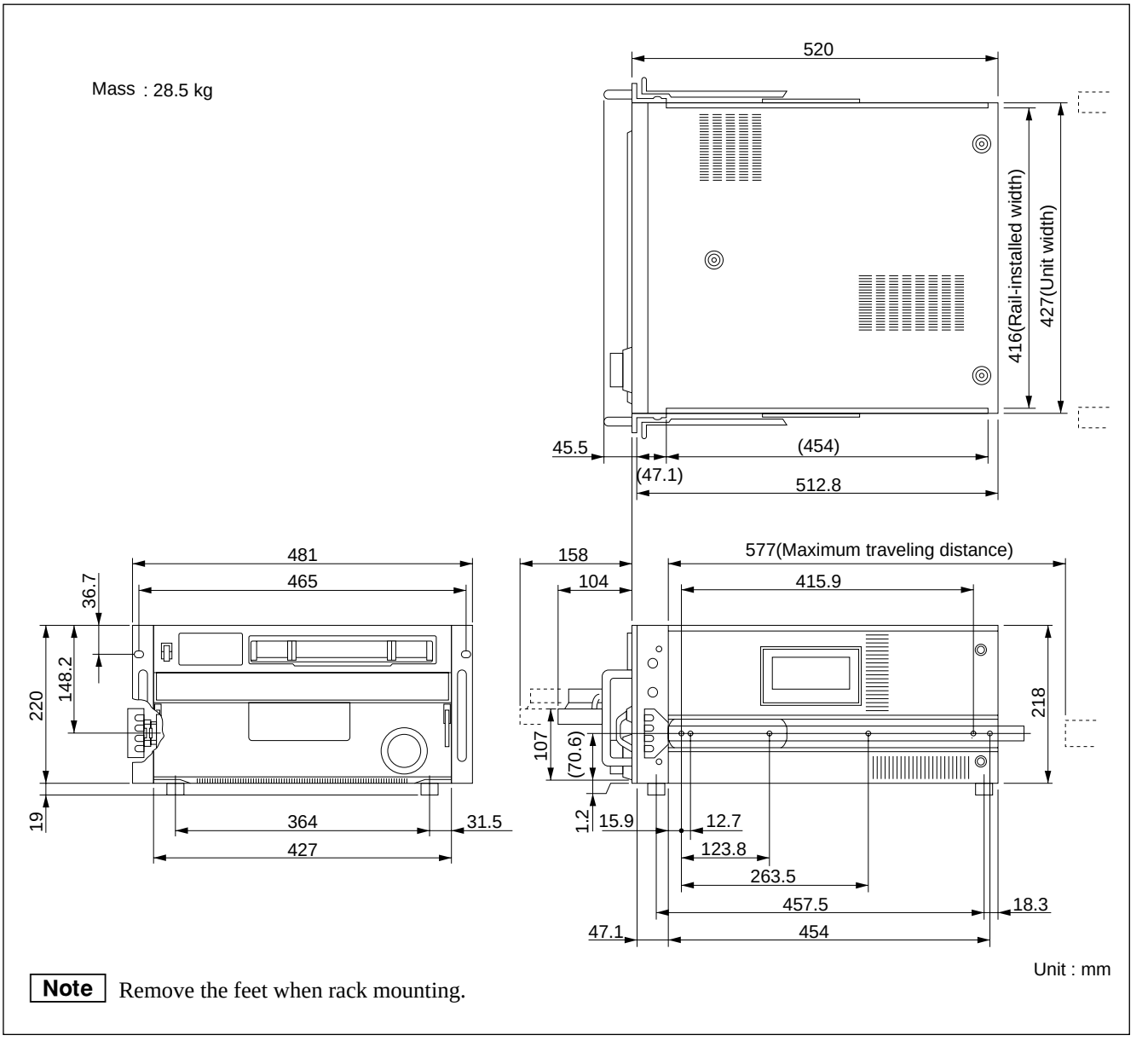
When the unit is installed on the desk or the like, leave at least four centimeters of space in the upper and right sides. Living 40 centimeters or more of space above the unit is recommended for the service operation.

When the unit is mounted in the rack, leave a space on the top or bottom of this unit by 1U.

Moreover, an air flow that is effective in cooling the unit is essential. If the ventilation is not enough, the unit may be damaged because of an increase of the internal temperature.

Note

This unit is air-cooled by the three fans. The operation with the upper lid is removed affects the air cooling by the fans. Complete the work in a short time as far as possible when operating the unit for inspection with the upper lid removed. If it takes a long time, blow to the unit by an electric fan to cool the unit.



Note Remove the feet when rack mounting.

Dimensions when Rack-Mounting

1-6. Rack Mounting

Explains how to mount this unit into a 19-inch standard rack.
Be sure to mount this unit into a rack accurately following the procedure and notes mentioned below.

CAUTION

- Use the specified rack mount rail.
  The use of other rail of low-strength may drop the unit and cause the risk of injury.
- To prevent toppling over the rack, fix it on the horizontal and firm floor securely with bolts, etc.
- Mounts the unit into a rack with a steady posture.

Note

- When other equipment with built-in hard disk drive are already mounted in the same rack for mounting this unit, turn off the power of the equipment before mounting this unit.
- Connect long enough cables on the connector panel, considering that the unit is pulled out from the rack.
- Do not operate this unit without the upper lid and bottom plate except when servicing it.
- To reduce an increase in the internal temperature of this unit, leave a space on the top or bottom of this unit by 1U.
- Adjust the temperature inside the rack within the range of the unit's operating temperature.

Specified Rack Mount Kit

RMM-111 (Optional accessory) or
RMM-110 (Optional accessory)

The color of rack angle of RMM-111 fits to the unit.
RMM-110 is the same consistance, strength and dimension as RMM-111, but the color of rack angle is different.

Note

To mount this unit in the FLEXICART, it is recommended to use the BKFC-53/2.

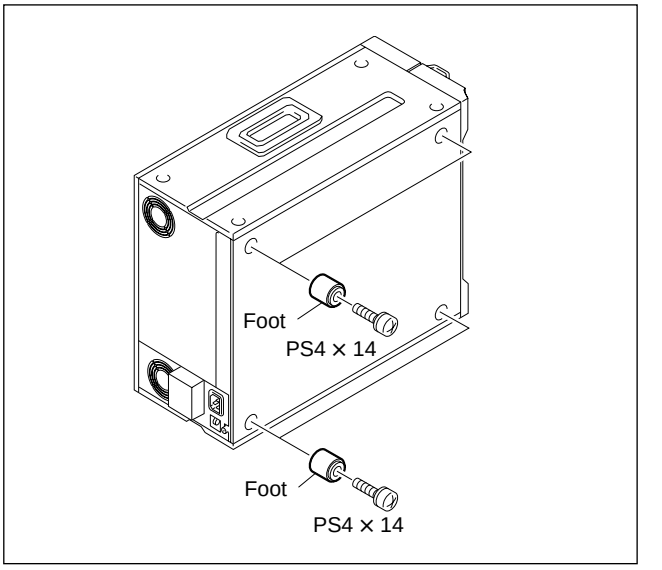
Parts Packed in RMM-110/111

- Slide rails 2
- Rack angles (handles) 2
- Rail brackets 4
- Plate nuts (large) 4
- Plate nuts (small) 4
- Screws (PSW4 × 16) 4
- Screws (B4 × 8) 8
- Hexagon socket head cap screws 8
- Flat washers 8
- Screws (RK5 × 14) 2
- Ornamental washers 2
- L-shaped hexagon wrench 1

Rack Mounting Procedure

• Removing the feet

1. Set the unit with its side panel down.
   Note
   Lend your hand so that the lower handle does not hang down.
2. Unscrew the four screws to remove the feet from the bottom plate of the unit.
3. Set the unit in a horizontal position.



Note

Keep these screws and the feet.
When operating the unit after demounting it from the rack, be sure to reattach the feet.
Tightening torque: 98×10^{-2} N • m {10 kgf • cm}

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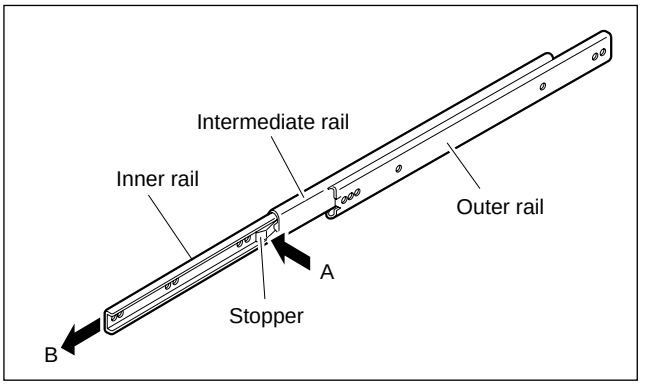
• Attaching the inner rails

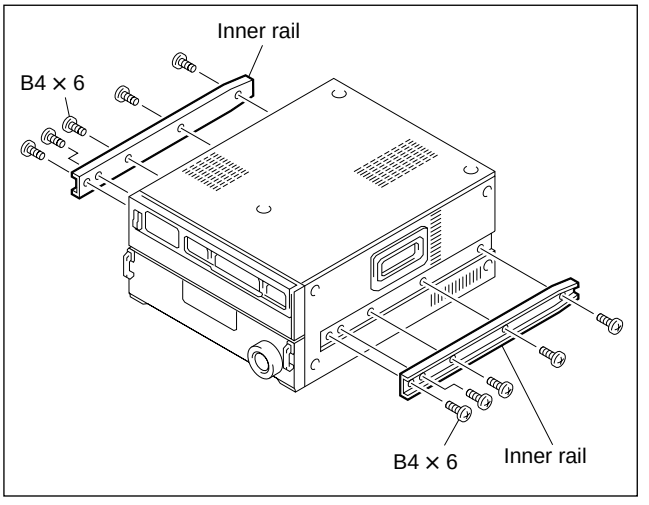
4. Pull the inner rails out from the two intermediate rails.
5. While pressing the stopper of the inner rail in the direction of the arrow A in the figure, pull the inner rail out in the direction of the arrow B.



6. Remove the ten screws from both sides (left and right) of the unit as shown in the figure below.
7. Attach the two inner rails to both sides (left and right) of unit with the removed screws in the step (6).
   Tightening torque: 120 × 10^{-2} N • m {12.2 kgf • cm}

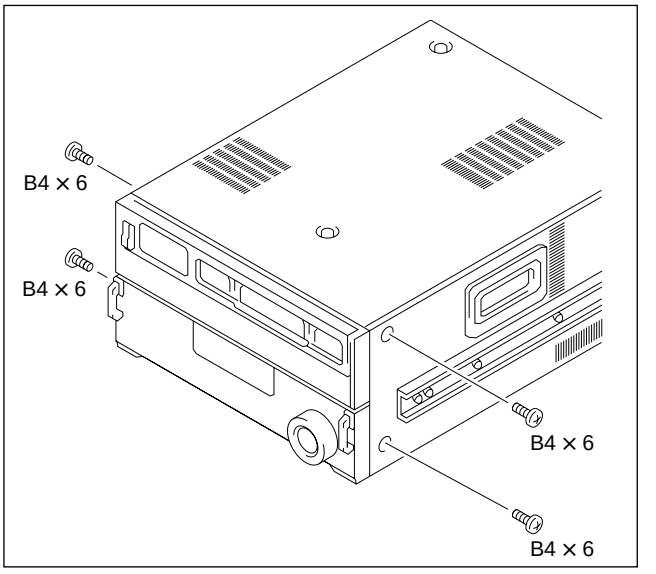
   Note

   Be sure to use the (B4 × 6) screws when attaching the inner rail. The use other-sized screws may cause a malfunction of the unit.



• Attaching the rack angles (handles)

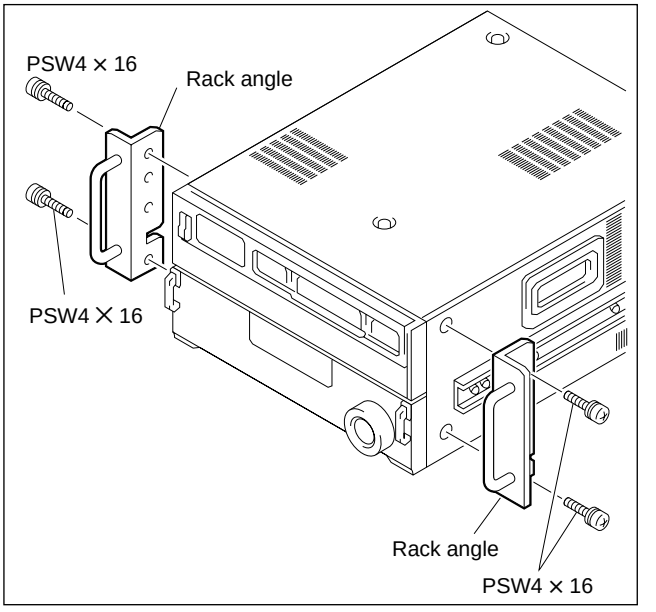
8. Remove the four screws from both sides (left and right) of the unit.



Note

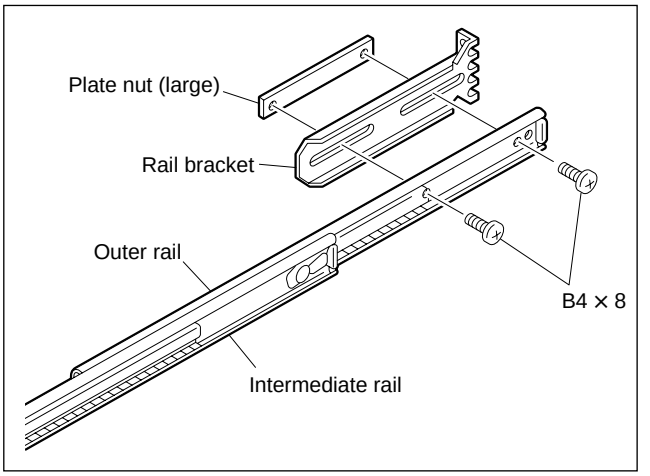
Keep these screws (B4 × 6).
Be sure to use these screws when directly fixing the side panels without the rack angles.
The use of longer screws such as the screws (PSW4 × 16) for fixing the rack angles will cause a malfunction of the unit.

9. Attach the two rack angles to both sides (left and right) of the unit with the supplied four screws (PSW4 × 16).
   Tightening torque: 120 × 10^{-2} N • m {12.2 kgf • cm}

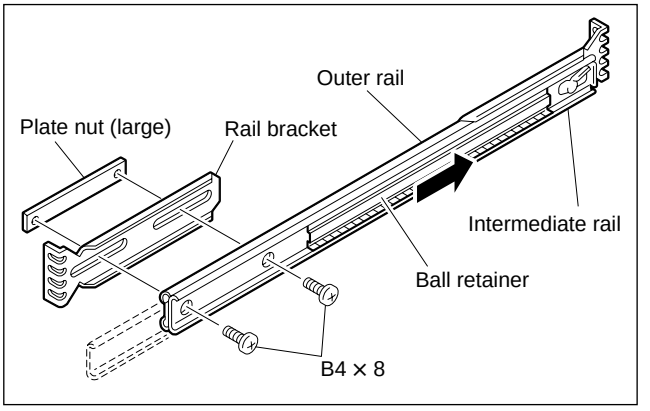


• Loosely attaching the rail brackets

10. Slide the intermediate rail as shown in the figure, and then loosely attach the rail bracket to the outer rail with a plate nut (large) and the two screws.



11. Slide the ball retainer in the direction of the arrow, loosely attach the rail bracket to the outer rail with a plate nut (large) and the two screws.

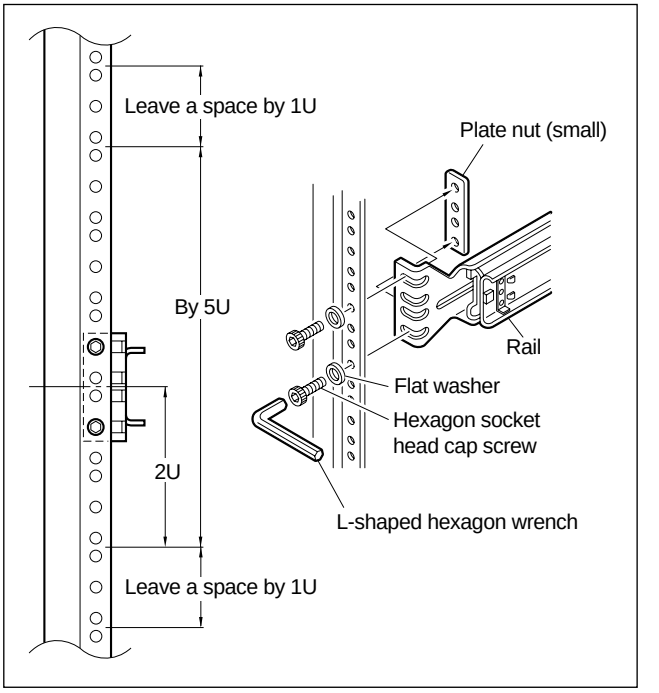


• Attaching the outer rails

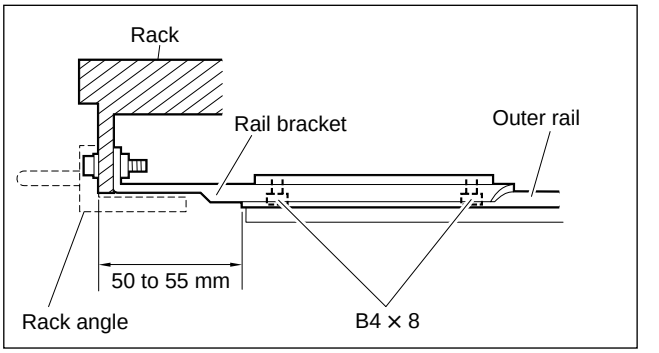
12. Loosely attach each outer rail to the 2U position from the bottom of the 5U space in the rack for installing this unit, with the eight hexagon socket head cap screws, eight flat washers, and four plate nuts (small).

Note

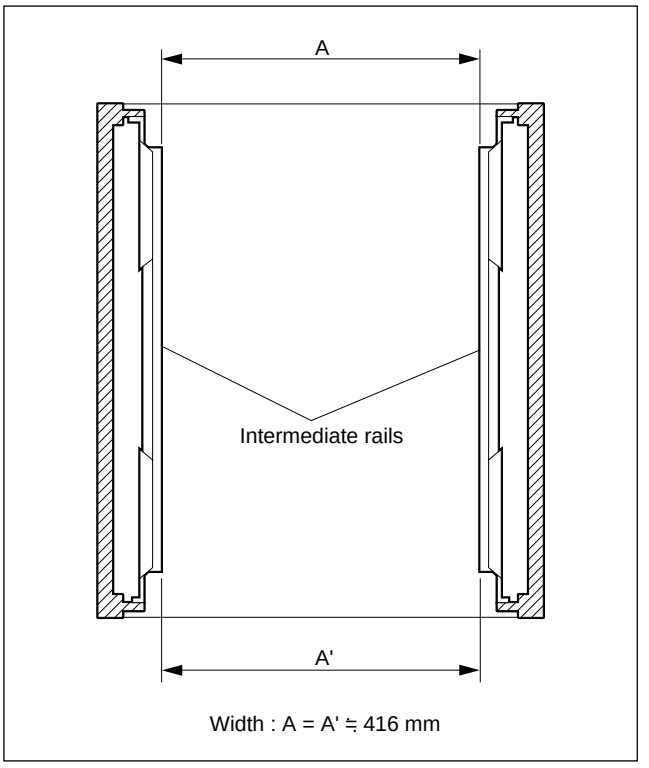
Leave a space on the top or bottom of this unit by 1U to reduce an increase in the internal temperature of this unit.



13. As shown in the following figure, adjust each front-side position of outer rails on both sides (left and right) so that the distance from the surface of the rack to the tip of the rail becomes within the range of 50 to 55 milimeters.
14. Fully tighten the eight screws (B4 × 8) fixing the four rail brackets.
    Tightening torque: 120×10^{-2} N • m {12.2 kgf • cm}



15. Check that the two intermediate rails attached to the rack are parallel.



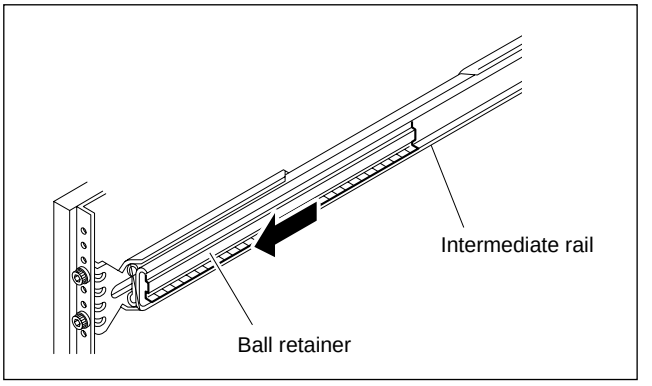
16. To fix the two outer rails to the rack, fully tighten the eight loosely fitted hexagon socket head cap screws in step 12 using the L-shaped hexagon wrench.

• Mounting in rack

CAUTION

Be sure to carry the unit by the two persons or more.

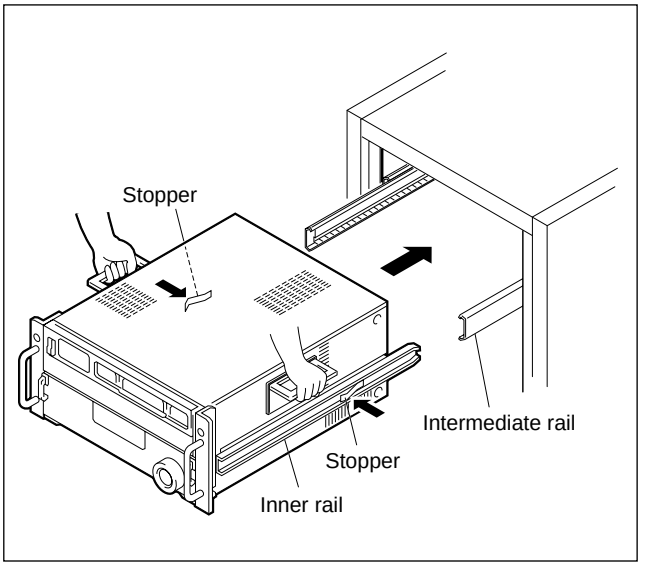
17. Slide each ball retainer of intermediate rails on both sides (left and right) in the direction of the arrow.



18. Pull equal length of each rail on both sides out.
19. Lift the unit holding the handles, slowly insert the inner rails into the intermediate rails.
20. While pressing each stopper of inner rails on both sides, slowly push the unit into the rack.

    Note

    Be careful not to catch your finger or hand in rack mount rail.



21. Slide the unit in and out from the rack about three times and check that the slide rails move smoothly. If they are not smoothly, demount the unit and go back to “Attaching the outer rails” (step 12).

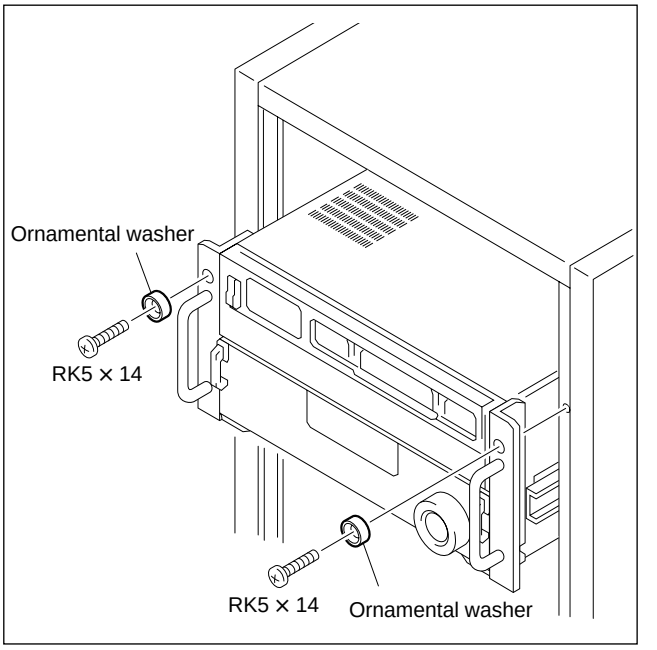
    CAUTION

    When demounting the unit, carry it by the two persons or more.

    Note

    This unit does not have the feet at this operating. Put down this unit on the floor or other, being careful not to damage the unit.

22. Secure the unit to the rack with two screws and two ornamental washers.
    Tightening torque: 120×10^{-2} N • m {12.2 kgf • cm}



1-7. Matching Connectors and Cables

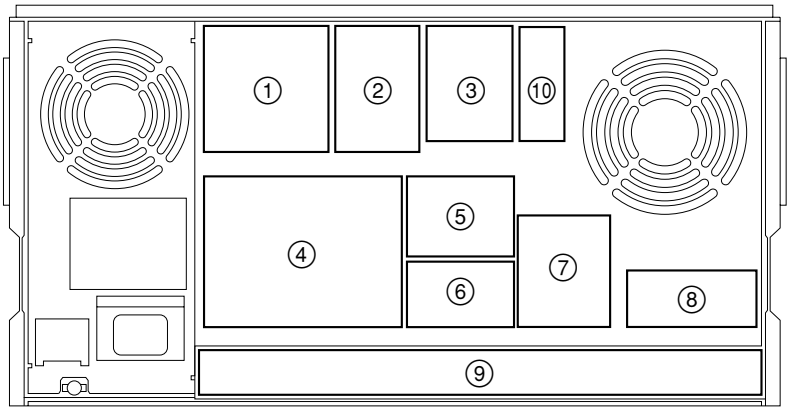
When external cables are connected to the connector of this unit, the hardware listed below (or equivalents) must be used.

Panel indication	Matching connector (cable)	Sony part No.
VIDEO INPUT	BNC 75Ω, MALE	1-569-370-12
VIDEO OUTPUT	BNC 75Ω, MALE	1-569-370-12
SDI	BNC 75Ω, MALE *1	1-569-370-12
SDTI (OPTION) *2	BNC 75Ω, MALE *1	1-569-370-12
AUDIO INPUT	XLR 3P, MALE	1-508-084-00
AUDIO OUTPUT	XLR 3P, FEMALE	1-508-083-00
AUDIO INPUT (AES/EBU)	BNC 75Ω, MALE *3	1-569-370-12
AUDIO OUTPUT (AES/EBU)	BNC 75Ω, MALE *3	1-569-370-12
TIME CODE IN	XLR 3P, MALE	1-508-084-00
OUT	XLR 3P, FEMALE	1-508-083-00
MONITOR OUTPUT	XLR 3P, FEMALE	1-508-083-00
VIDEO CONTROL	D-SUB 15P, FEMALE and JUNCTION SHELL 15P	1-561-610-21 1-561-929-00
RS-232C	D-SUB 9P, FEMALE	1-563-815-21
REMOTE1-IN (9P)	9P remote control cable (RCC-G series) or D-SUB 9P, MALE and JUNCTION SHEEL 9P	 – 1-560-651-00 1-561-749-00
REMOTE1-OUT (9P)	9P remote control cable (RCC-G series) or D-SUB 9P, MALE and JUNCTION SHEEL 9P	 – 1-560-651-00 1-561-749-00
REMOTE 2 PARALLEL I/O (50P)	D-SUB 50P, MALE and JUNCTION SHELL 50P	1-565-516-11 1-563-379-11
CONTROL PANEL	D-SUB 29P cable *4	–
PHONE *5	JM-60 stereo phone plug	–

∗1: Coaxial cable length : max. 200 meters (Reference value based on DNW series)
It is recommended to connect the BELDEN8281 cable or equivalent to this connector.
∗2: SDTI (SX) OUTPUT connectors are supplied with optional kit BKNW-118.
SDTI-CP OUTPUT connectors are supplied with optional kit BKNW-124.
∗3: Coaxial cable length : max. 600 meters (Reference value based on DNW series)
It is recommended to connect the BELDEN8281 cable or equivalent to this connector.
∗4: Supplied with optional control panel extension kit BKNW-122.
∗5: It exists on the front (upper control panel).

1-8. Signal Inputs and Outputs

< Reduced drawing of rear panel >



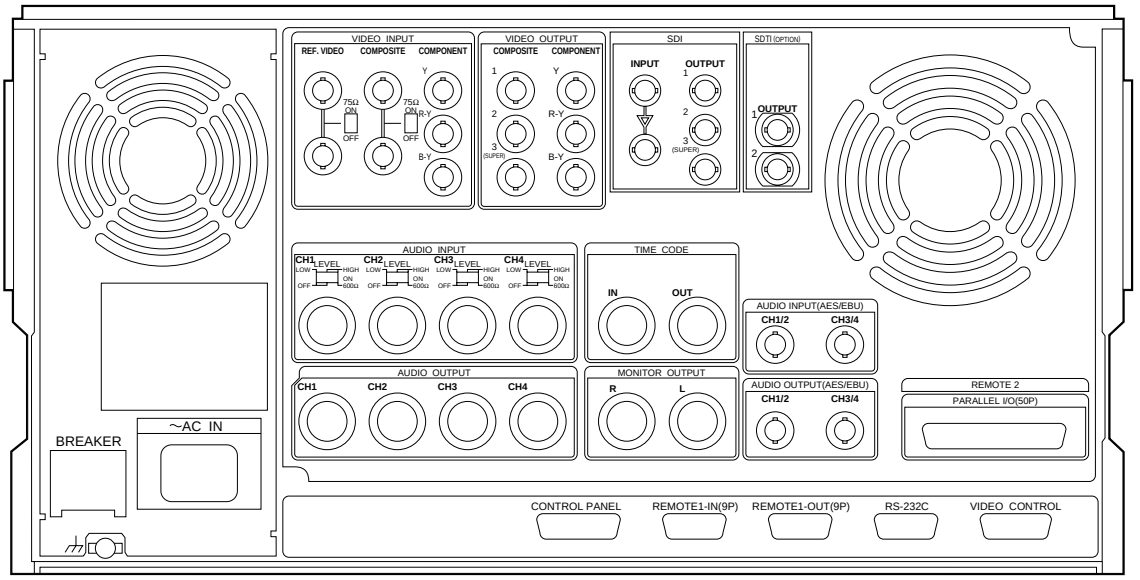
Remote connectors

⑧ REMOTE PARALLEL I/O (50P) *	D-SUB 50P connector (Refer to Optional “Interface manual” for details.)
⑨ VIDEO CONTROL	D-SUB 15P connector for a TBC remote controller (BVR-50) connection
⑨ RS-232C	D-SUB 9P connector (RS-232C interface) for ISR (Interactive Status Reporting)
⑨ REMOTE1-OUT (9P)	D-SUB 9P connector (RS-422A interface) Remote control
⑨ REMOTE1-IN (9P)	D-SUB 9P connector (RS-422A interface) Remote control
⑨ CONTROL PANEL	D-SUB (mini) 29P connector for an outside control panel connection

Input connectors

① VIDEO INPUT, REF.VIDEO	BNC × 2 in loop through connection Outside reference video signal (Black burst or composite sync) 0.3 V p-p, 75 Ω, sync negative
① VIDEO INPUT, COMPOSITE	BNC × 2 in loop through connection Analog composite video 1.0 V p-p, 75 Ω, sync negative
① VIDEO INPUT, COMPONENT	BNC × 3 (1 set: Y, R-Y, and B-Y) Analog component video Y : 1.0 V p-p, 75 Ω, sync negative R-Y/B-Y : 0.7 V p-p, 75 Ω
③ SDI	BNC × 1 (active through out × 1) Serial digital interface (270 Mbit/s), complies with SMPTE 259M & ITU-R BT.656
④ AUDIO INPUT	XLR 3-pin × 4 (1 set: CH1, CH2, CH3, and CH4) Analog audio 4 channels LOW OFF : −60 dBu, high impedance, balanced HIGH OFF : +4 dBu (Standard), high impedance, balanced HIGH ON : +4 dBm (Standard), 600 Ω termination, balanced
⑤ TIME CODE IN	XLR 3-pin × 1 Time code 0.5 to 18 V p-p, 10 kΩ, balanced
⑦ AUDIO INPUT (AES/EBU)	BNC × 2 (1 set: CH1/2 and CH3/4) Digital audio 4 channels AES/EBU format, complies with AES-3id-1995

< Rear panel >



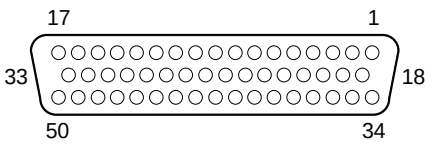
Note This figure is with optional kit.

Output connectors

② VIDEO OUTPUT, COMPOSITE	BNC × 3 (including 1 for character superimpose) Analog composite video 1.0 V p-p, 75 Ω, sync negative
② VIDEO OUTPUT, COMPONENT	BNC × 3 (1 set: Y, R-Y, and B-Y) Analog component video Y : 1.0 V p-p, 75 Ω, sync negative R-Y/B-Y : 0.7 V p-p, 75 Ω
③ SDI	BNC × 3 (including 1 for character superimpose) Serial digital interface (270 Mbit/s), complies with SMPTE 259M & ITU-R BT.656
④ AUDIO OUTPUT	XLR 3-pin × 4 (1 set: CH1, CH2, CH3, and CH4) Analog audio 4 channels +4 dBm (Standard) (600 Ω load), low impedance, balanced
⑤ TIME CODE OUT	XLR 3-pin × 1 Time code 2.2 V p-p, low impedance, balanced
⑥ MONITOR OUTPUT	XLR 3-pin × 2 (1set: L and R) Analog audio +4 dBm (Standard) (600 Ω load), low impedance, balanced
⑦ AUDIO OUTPUT (AES/EBU)	BNC × 2 (1set: CH1/2 and CH3/4) Digital audio 4 channels AES/EBU format, complies with AES-3id-1995
⑩ SDTI	BNC × 2 (optional kit BKNW-118 or BKNW-124) Serial data transport interface (270 Mbit/s) in conformity to MPEG2 4: 2: 2 P@ML BKNW-118: Complies with SMPTE 305M (SDTI (SX)) BKNW-124: Complies with SMPTE 305M + 326M (SDTI-CP)
PHONE (Upper control panel)	JM-60 stereo phone jack Analog audio up to −12 dBu (8 Ω load), unbalanced

PARALLEL I/O: 50-pin (female)

〈External view〉



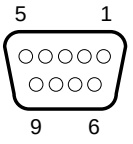
Pin No.	I/O *1	Setting change *2	Signal	Description
1	IN	○	FF	CLOSURE SW (FF)
2	OUT	×	REC SW	PANEL REC SW OUT
3	OUT	×	PLAY SW	PANEL PLAY SW OUT
4	OUT	×	STOP SW	PANEL STOP SW OUT
5	OUT	×	ENTRY SW	PANEL ENTRY SW OUT
6	OUT	×	REF SYSTEM ALARM	Non-REFERENCE
7	OUT	×	CF LOCK	COLOR FRAME LOCK STATUS
8	OUT	×	DRUM LOCK	LOCK STATUS OF DRUM SERVO
9	OUT	×	CAP LOCK	LOCK STATUS OF CAPSTAN SERVO
10	OUT	○	CUE PRESET	EDIT PRESET STATUS of the CUE Channel
11	OUT	○	TC PRESET	EDIT PRESET STATUS of the TC Channel
12	OUT	○	OXIDE/METAL	OXIDE/METAL TAPE STATUS
13	OUT	○	TAPE THICKNESS	TAPE THICKNESS STATUS
14	OUT	×	SPARE	SPARE
15	OUT	×	SPARE	SPARE
16	——	——	+12V	——
17	——	——	GND	SIGNAL GND
18	IN	○	PREROLL	CLOSURE SW (PREROLL)
19	IN	○	STBY ON	CLOSURE SW (STANDBY ON)
20	IN	○	REW	CLOSURE SW (REW)
21	IN	○	ENTRY	CLOSURE SW (ENTRY IN)
22	IN	○	STBY OFF	CLOSURE SW (STANDBY OFF)
23	IN	○	EJECT	CLOSURE SW (EJECT)
24	OUT	×	REC	REC STATUS
25	OUT	×	CH CONDITION RED	CHANNEL CONDITION RED STATUS
26	OUT	○	ASSEMBLE PRESET	ASSEMBLE PRESET STATUS
27	OUT	○	EDIT OUT	EDIT STATUS
28	OUT	○	EJECT OUT	EJECT STATUS
29	OUT	○	ANALOG/DIGITAL	ANALOG/DIGITAL STATUS
30	OUT	○	REEL HUB	REEL HUB STATUS
31	OUT	×	REM2 SETTING DATA RESET	REMOTE2 SETTING DATA RESET STATUS
32	OUT	×	ALL REC INHIBIT	ALL REC INHIBIT STATUS
33	——	——	GND	
34	IN	○	PLAY	CLOSURE SW (PLAY)
35	IN	○	STOP	CLOSURE SW (STOP)

Pin No.	I/O *1	Setting change *2	Signal	Description
36	IN	○	REC	CLOSURE SW (REC)
37	OUT	×	REV LAMP	REV LAMP STATUS
38	OUT	○	DA2 PRESET	DA2 EDIT PRESET STATUS
39	OUT	○	DA1 PRESET	DA1 EDIT PRESET STATUS
40	OUT	×	FWD LAMP	FWD LAMP STATUS
41	OUT	○	DA4 PRESET	DA4 EDIT PRESET STATUS
42	OUT	○	DA3 PRESET	DA3 EDIT PRESET STATUS
43	OUT	×	STOP	STOP STATUS
44	OUT	○	VIDEO PRESET	VIDEO EDIT PRESET STATUS
45	OUT	○	INSERT PRESET	INSERT EDIT PRESET STATUS
46	OUT	×	STBY ON	STANDBY ON STATUS
47	OUT	×	PLAY	PLAY STATUS
48	OUT	×	REMOTE	REMOTE STATUS
49	OUT	×	ALARM	SYSTEM ALARM STATUS
50	OUT	○	PREROLL	PREROLL STATUS

∗1: Input ; 47 kΩ pull up to +5 V (close/open)
Output ; 10 kΩ pull up to +5 V (0 V or open)
∗2: The pins described as ○ mark are possible to change the setting.
Refer to the optional interface manual for changing the setting.

REMOTE1-IN: 9-pin (female)
REMOTE1-OUT: 9-pin (female)

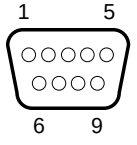
〈External view〉



Pin No.	Signal
1	GND
2	RM TX(–)
3	RM RX(+)
4	GND
5	PRIORITY
6	GND
7	RM TX(+)
8	RM RX(–)
9	GND

RS-232C: 9-pin (male)

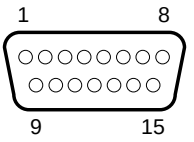
〈External view〉



Pin No.	Signal
1	DCD ; Data Carrier Detect (Input)
2	RXD ; Received Data (Input)
3	TXD ; Transmitted Data (Output)
4	DTR ; Data Terminal Ready (Output)
5	SG ; Signal Ground
6	DSR ; Data Set Ready (Input)
7	RTS ; Request to Send (Output)
8	CTS ; Clear to Send (Input)
9	NC

VIDEO CONTROL: 15-pin (male)

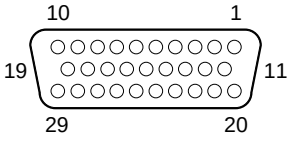
〈External view〉



Pin No.	Signal	Terminal voltage (V)
1	SYNC CONT (Input)	–5 to +5
2	HUE CONT (Input)	–5 to +5
3	SC CONT (Input)	–5 to +5
4	VIDEO LEVEL CONT (Input)	–5 to +5
5	SETUP CONT (Input)	–5 to +5
6	CHROMA LEVEL CONT (Input)	–5 to +5
7	REG –12V (Output)	–12
8	GND	——
9 to 12	NC	——
13	Y/C DELAY CONT (Input)	–5 to +5
14	NC	——
15	REG +12V (Output)	+12

CONTROL PANEL: 29-pin (female)

〈External view〉



Pin No.	Signal	Terminal voltage (V)
1	GND	——
2	KEY RX (–) (Input)	RS422
3	KEY TX (+) (Output)	RS422
4	GND	——
5 to 7	REG +8V (Output)	+8
8, 9	NC	——
10, 11	GND	——
12	KEY RX (+) (Input)	RS422
13	KEY TX (–) (Output)	RS422
14	GND	——
15 to 17	REG +8V (Output)	+8
18	NC	——
19 to 23	GND	——
24 to 26	REG +8V (Output)	+8
27, 28	NC	——
29	GND	——-

1-9. Switch Settings on Connector Panel

When the unit is installed, be sure to perform the following setup.
Refer to the operation manual “Section 2 Location and Function of Parts” for setup.

- Analog audio input level/600 Ω termination switches
- 75 Ω termination switch of reference video input
- 75 Ω termination switch of composite video input

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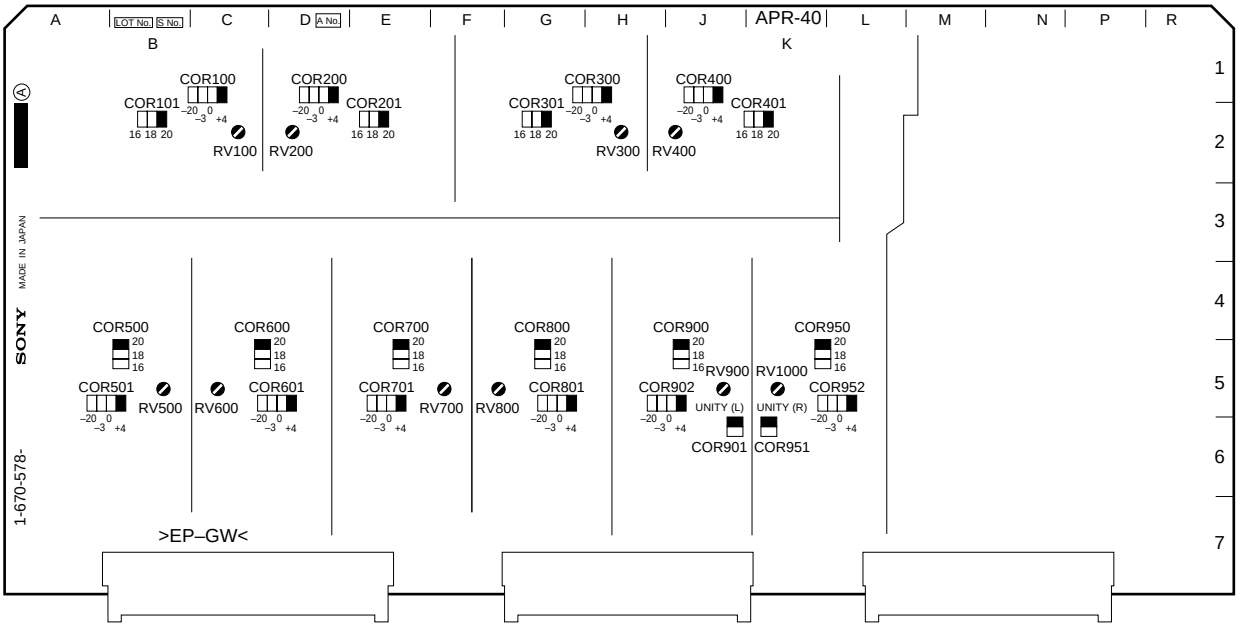
1-10. Switch and Shorting Plug Settings on PC Boards

1-10-1. APR-40 Board

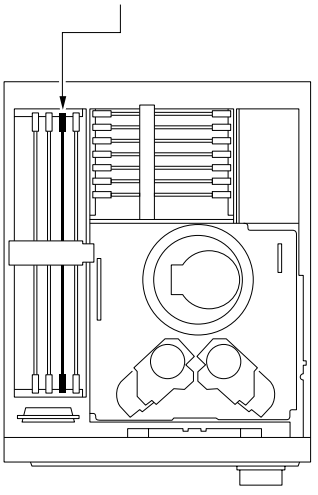
If necessary, perform the following audio-related settings using the shorting plugs on the APR-40 board.

- Audio input level *1
- Audio input headroom *2
- Audio output level *1
- Audio output headroom *2
- Monitor output level *1
- Monitor output headroom *2
- Monitor output level, fixed/variable selection

*1: Select the level for each channel from +4, 0, −3, −20 dBm. (Factory settings: +4 dBm for each channel)
*2: Select the headroom for each channel from 20, 18, 16, dB. (Factory settings: 20 dB for each channel)



APR-40 Board (Side A)



< Top View >

Note

Refer to Section 2-13 for removing/reattaching the plug-in boards.

Audio input level settings

Channel	Ref. No.	Display	Input level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	–3	–20	
CH1	COR100	+4	short	open	open	open	RV100
		0	open	short	open	open	
		–3	open	open	short	open	
		–20	open	open	open	short	
CH2	COR200	+4	short	open	open	open	RV200
		0	open	short	open	open	
		–3	open	open	short	open	
		–20	open	open	open	short	
CH3	COR300	+4	short	open	open	open	RV300
		0	open	short	open	open	
		–3	open	open	short	open	
		–20	open	open	open	short	
CH4	COR400	+4	short	open	open	open	RV400
		0	open	short	open	open	
		–3	open	open	short	open	
		–20	open	open	open	short	

Audio input headroom settings

Channel	Ref. No.	Display	Input headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
CH1	COR101	20	Short	Open	Open	RV100
		18	Open	Short	Open	
		16	Open	Open	Short	
CH2	COR201	20	Short	Open	Open	RV200
		18	Open	Short	Open	
		16	Open	Open	Short	
CH3	COR301	20	Short	Open	Open	RV300
		18	Open	Short	Open	
		16	Open	Open	Short	
CH4	COR401	20	Short	Open	Open	RV400
		18	Open	Short	Open	
		16	Open	Open	Short	

Audio output level settings

Channel	Ref. No.	Display	Output level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
CH1	COR501	+4	Short	Open	Open	Open	RV500
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH2	COR601	+4	Short	Open	Open	Open	RV600
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH3	COR701	+4	Short	Open	Open	Open	RV700
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH4	COR801	+4	Short	Open	Open	Open	RV800
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

Audio output headroom settings

Channel	Ref. No.	Display	Output headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
CH1	COR500	20	Short	Open	Open	RV500
		18	Open	Short	Open	
		16	Open	Open	Short	
CH2	COR600	20	Short	Open	Open	RV600
		18	Open	Short	Open	
		16	Open	Open	Short	
CH3	COR700	20	Short	Open	Open	RV700
		18	Open	Short	Open	
		16	Open	Open	Short	
CH4	COR800	20	Short	Open	Open	RV800
		18	Open	Short	Open	
		16	Open	Open	Short	

Monitor output level settings

Channel	Ref. No.	Display	Output level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	–3	–20	
L	COR902	+4	Short	Open	Open	Open	RV900
		0	Open	Short	Open	Open	
		–3	Open	Open	Short	Open	
		–20	Open	Open	Open	Short	
R	COR952	+4	Short	Open	Open	Open	RV1000
		0	Open	Short	Open	Open	
		–3	Open	Open	Short	Open	
		–20	Open	Open	Open	Short	

Monitor output headroom settings

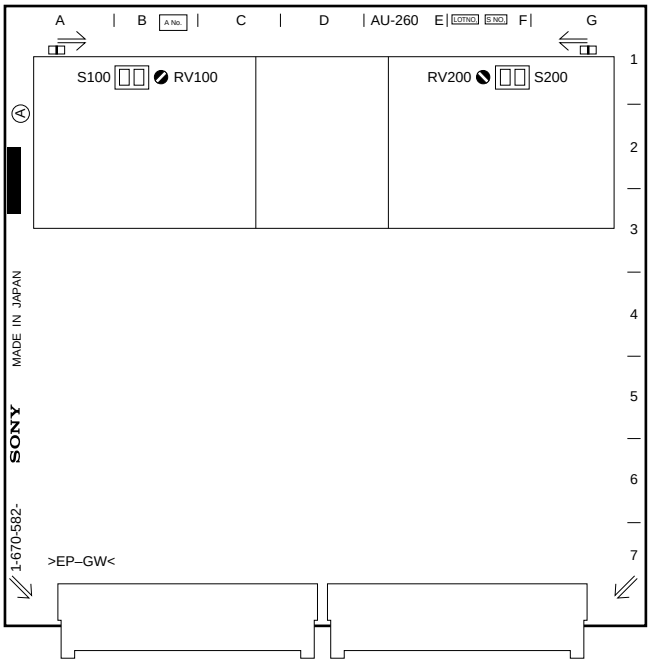
Channel	Ref. No.	Display	Output headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
L	COR900	20	Short	Open	Open	RV900
		18	Open	Short	Open	
		16	Open	Open	Short	
R	COR950	20	Short	Open	Open	RV1000
		18	Open	Short	Open	
		16	Open	Open	Short	

Monitor output level switching (fixed or variable)

When the variable level is selected, the level is adjusted with the PHONE level control knob.

Channel	Ref. No.	Display	Monitor output level [ ]: Factory setting	
			[Fixed]	Variable
L	COR901	UNITY(L)	Short	Open
		VAR(L)	Open	Short
R	COR951	UNITY(R)	Short	Open
		VAR(R)	Open	Short

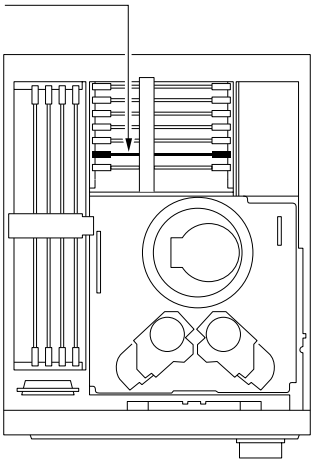
1-10-2. AU-260 Board



AU-260 Board (Side A)

Note

Refer to Section 2-13 for removing/reattaching the plug-in board.



< Top View >

HEAD TUNE switches (For Betacam/Betacam SP longitudial audio playback)

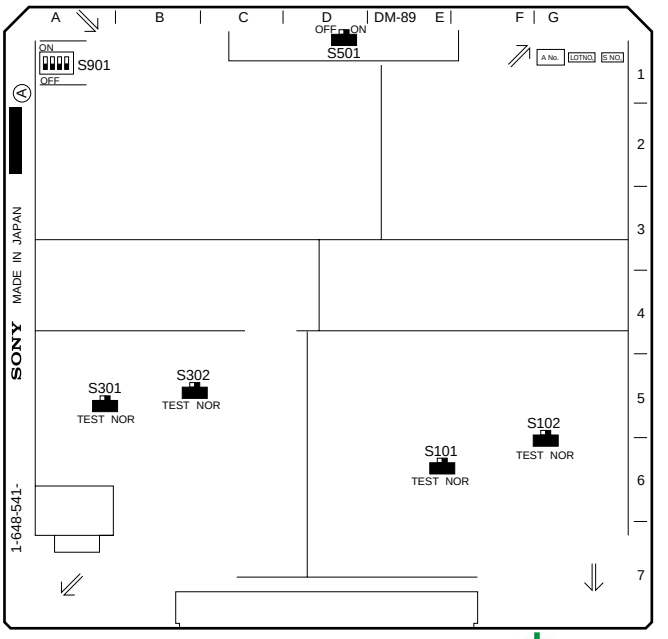
It is not necessary to change the setting of this switch, when installing.

Channel	Ref. No.	Description
CH1	S100	By coupling with RV100, adjust the CH1 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.
CH2	S200	By coupling with RV200, adjust the CH2 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.

1-10-3. DM-89 Board

Note

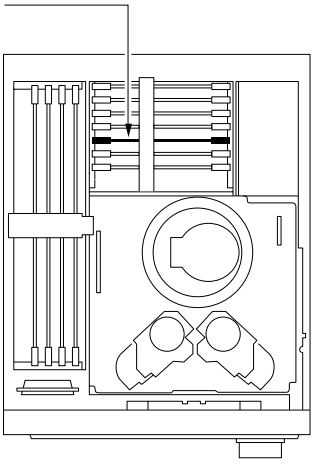
Never change the settings of the factory use switches.



DM-89 Board (Side A)

Note

Refer to Section 2-13 for removing/reattaching the plug-in board.



< Top View >

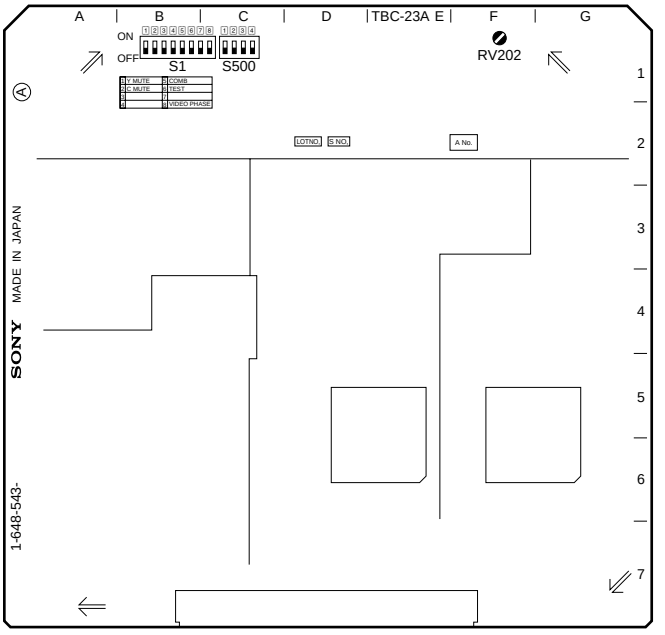
Switches

Ref. No.	Bit	Name	Description	Factory setting
S101		Y-RF LPF & EQ TEST (Y-RF low-pass filter & equalizer test)	The Y-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP103. (GND to E102)	NORMAL POSITION
S102		————	Factory use	NORMAL POSITION
S301		C-RF LPF & EQ TEST (C-RF low-pass filter & equalizer test)	The C-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP303. (GND to E302)	NORMAL POSITION
S302		————	Factory use	NORMAL POSITION
S501		————	Factory use	ON
S901	1	RF ADJUSTING	Selection whether to adjust the RF or not. OFF (OPEN) : Normal mode ON (CLOSE) : Test (adjustment) mode	OFF (OPEN)
	2 | 4	————	Factory use	OFF (OPEN)

1-10-4. TBC-23A Board

Note

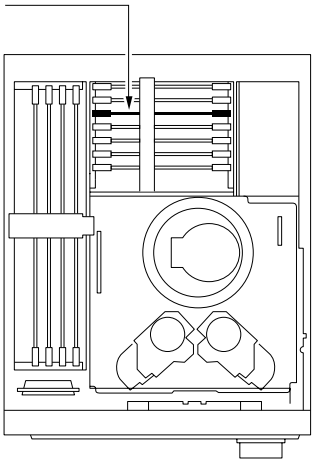
Never change the settings of the factory use switches.



TBC-23A Board (Side A)

Note

Refer to Section 2-13 for removing/reattaching the plug-in board.



< Top View >

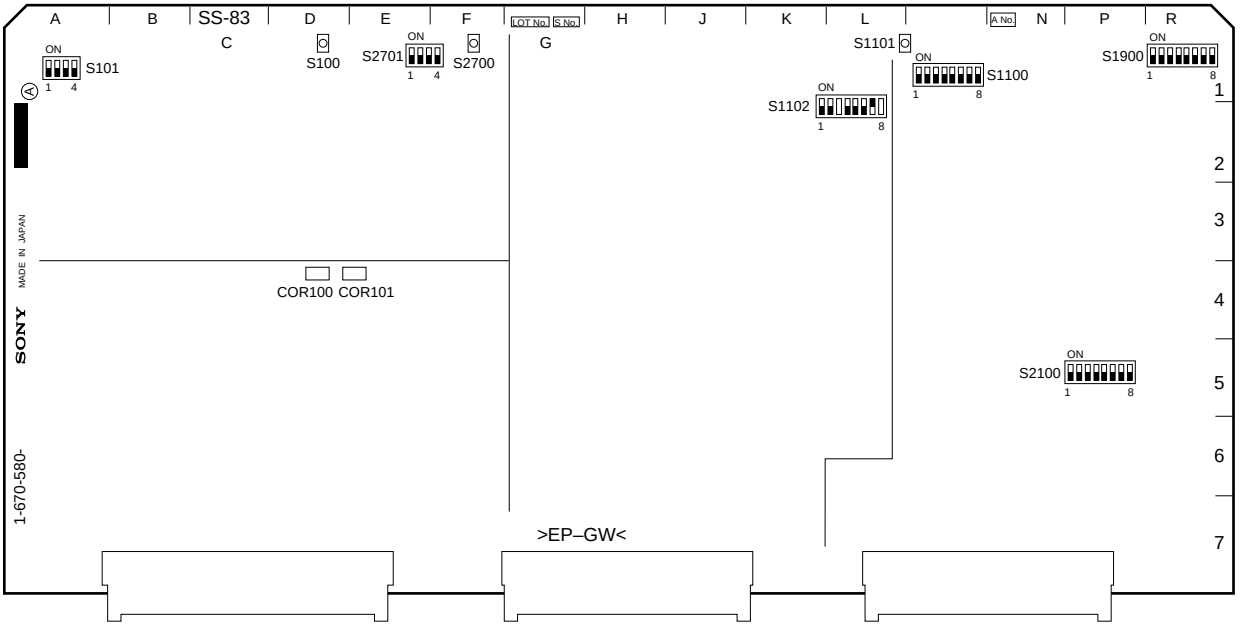
Switches

Ref. No.	Bit	Name	Description	Factory setting
S1	1	Y MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Muting luminance signal	OFF (OPEN)
	2	C MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Muting color difference signal	OFF (OPEN)
	3	————	Factory use	OFF (OPEN)
	4	————	Factory use	OFF (OPEN)
	5	COMB	Selection whether to select a comb filter when the color difference signal has significant line crawl which cannot be corrected by LCC or not. OFF (OPEN) : Comb filter OFF ON (CLOSE) : Comb filter ON	OFF (OPEN)
	6	TBC TEST	Selection whether to enable the TBC-23A and -24 boards self diagnostics or not. OFF (OPEN) : Normal mode ON (CLOSE) : Test (self diagnostics) mode	OFF (OPEN)
	7	————	Factory use	OFF (OPEN)
	8	VIDEO PHASE	Selection whether to use VIDEO PHASE VR or not. OFF (OPEN) : VIDEO PHASE VR (RV202) disabled ON (CLOSE) : VIDEO PHASE VR (RV202) enabled	OFF (OPEN)
S500	1 | 4	————	Factory use	OFF (OPEN)

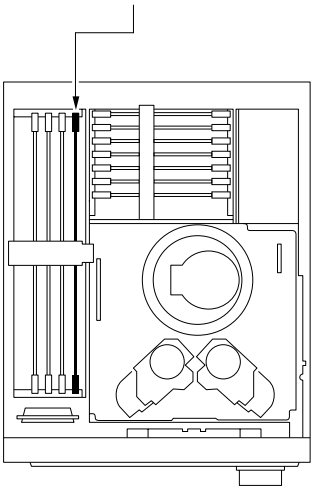
1-10-5. SS-83 Board

Note

Never change the settings of the factory use switches/shorting plugs.



SS-83 Board (Side A)



< Top View >

Note

Refer to 2-13 for removing/ reattaching the plug-in board.

Shorting plugs

Ref. No.	Name	Description	Factory setting
COR 100	————	Factory use	OPEN
COR 101	————	Factory use	OPEN

Switches

Ref. No.	Bit	Name	Description	Factory setting
S100		REEL POSITION	Press this switch when changing the reel position. This switch does not operate in the state of installing the cassette compertment.	————
S101	1	FLASH MEMORY	**Note** Do not change the setting of this switch during installation. Select the operation mode of flash memory. OFF (OPEN) : Normal mode ON (CLOSE) : Writing mode	OFF (OPEN)
	2	ANA AUTO-TRACKING	Select whether to enable auto tracking operation or not during playing back the tape recorded based on the Betacam/Betacam SP format. OFF (OPEN) : Not operate (The tracking is controlled using RV100.) ON (CLOSE) : Operates **Note** The Betacam SX tape playback is carried out by non-tracking operation.	OFF (OPEN)
	3	ANA DISABLE	Select whether to prohibit analog Betacam tape playback or not. OFF (OPEN) : Enable ON (CLOSE) : Disable	OFF (OPEN)
	4	SV ERR DISABLE	**Note** Do not change the setting of this switch during installation. This switch selects whether to disable the detection of a malfunctional error in a servo circuit. OFF (OPEN) : Enable (normal) ON (CLOSE) : Disable	OFF (OPEN)
S1100	1	EXTENDED MENU	OFF (OPEN) : Not display the extended menu of the setup menu ON (CLOSE) : Displays the extended menu of the setup menu	OFF (OPEN)
	2	MAINTE MODE ACCESS	OFF (OPEN) : Not enter into the maintenance mode from the lower control panel ON (CLOSE) : Enters into the maintenance mode from the lower control panel	OFF (OPEN)
	3	————	Factory use	OFF (OPEN)
	4	RS232C DEBUG	OFF (OPEN) : RS-232C connector is for ISR ON (CLOSE) : RS-232C connector is for debug	OFF (OPEN)
	5-8	————	Factory use	OFF (OPEN)
S1101		MAINTE MODE START	Press this switch when starting the maintenance mode.	————
S1102		**Note** Never change the settings of the S1102 switch since each switch is set according to the characteristics of the unit. But set this switch according to each unit when replacing the board.		
	1, 2	————	Factory use	OFF (OPEN)
	3-6	Model ID	DNW-A75/A75P / TTV 4075 N/P 3: OFF / ON 4: OFF / OFF 5: OFF / OFF 6: OFF / OFF	⇦
	7	J/UC	Settable when pin No.8 is OFF. OFF (OPEN) : Japan model ON (CLOSE) : Except Japan model	ON (CLOSE)
	8	525/625	OFF (OPEN) : 525/60 model ON (CLOSE) : 625/50 model	DNW-A75/TTV 4075N: OFF (OPEN) DNW-A75P/TTV 4075P: ON (CLOSE)
S1900	1-8	————	Factory use	OFF (OPEN)
S2100	1-8	————	Factory use	OFF (OPEN)
S2700		DE-DISTORTION	Press this switch when distorting	————
S2701	1	————	Factory use	OFF (OPEN)
	2	DT MODE	OFF (OPEN): DT ON ON (CLOSE): DT OFF	OFF (OPEN)
	3-8	————	Factory use	OFF (OPEN)

1-11. Switching Search Dial Mode

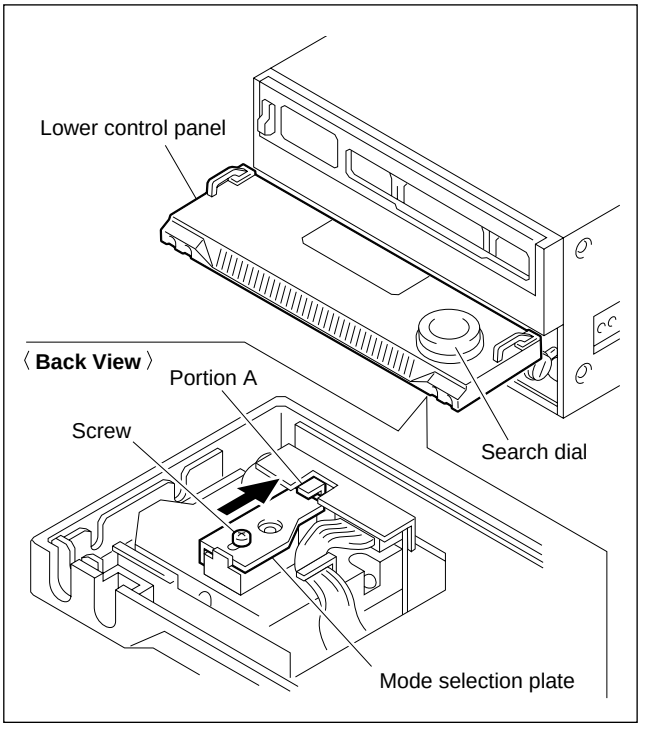
There are two kinds of operation to switch the search dial on the lower control panel between jog mode and shuttle mode.

- **SHUTTLE/JOG button selecting**
  To enter the shuttle mode, press the SHUTTLE button.
  To enter the jog mode, press the JOG button.

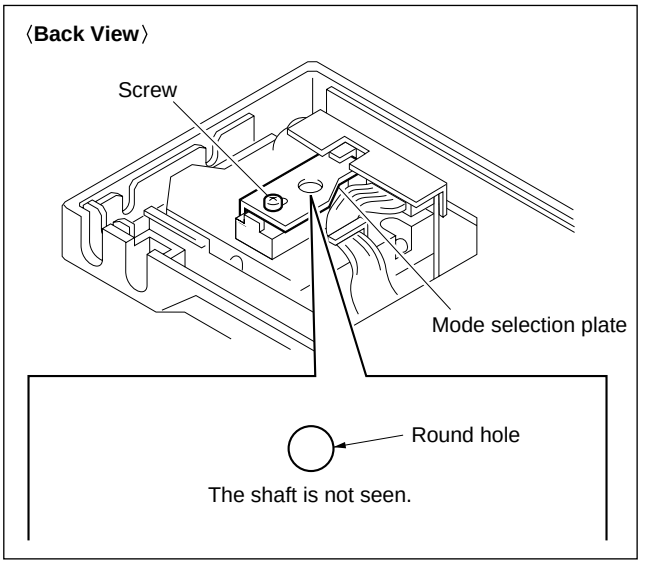
- **Search dial pressing**
  When you press the dial, this unit toggles between shuttle and jog modes.
  It is possible to prohibit a manner of toggling.

Prohibiting Search Dial Pressing

1. Open the lower control panel (as shown in the figure.)
2. Loosen a screw on the backside of the search dial as shown in the figure.
3. Slide the mode selection plate in the direction indicated by the arrow until it contacts the portion A.

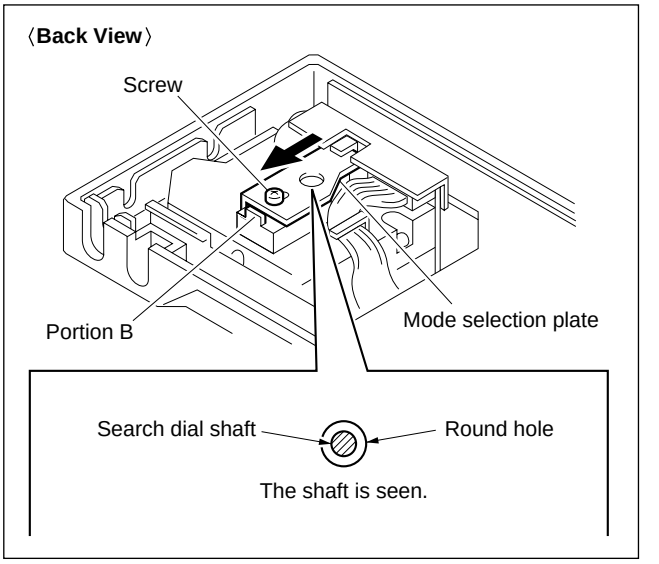


4. Check to see that the shaft of the search dial is not seen in the round hole of the mode selection plate, and then tighten the screw.



Allowing Search Dial Pressing

1. Open the lower control panel (Operation side up).
2. Loosen a screw on the backside of the search dial as shown in the figure.
3. Slide the mode selection plate in the direction indicated by the arrow until it contacts the portion B.
4. Check to see that the shaft of the search dial is seen in the round hole of the mode selection plate, and then tighten the screw.



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1-12. Reference System

For each reference signal in this unit, either of an external reference video signal (*3) or input video signal (*4) is automatically selected according to the setting of the OUT REF switch on the sub control panel, the setting of setup menu ITEM-309, and the operation mode (PB/EDIT/REC) of this unit. (Refer to the table below.)
Regarding the reference signal (clock) of an analog video signal in an A/D converter, the analog video signal itself is used as a reference signal under anysetting.

<table>
<tr><td>Menu ITEM-309</td><td>EXT</td><td colspan="5">AUTO</td></tr>
<tr><td>OUT REF switch</td><td>————</td><td colspan="3">REF</td><td>INPUT VIDEO</td></tr>
<tr><td>Operation mode</td><td>————</td><td>PB</td><td>EDIT (*1)</td><td>EDIT (*2)</td><td>REC</td><td>————</td></tr>
<tr><td>Video input A/D</td><td colspan="6" rowspan="4">External Reference Video (*3) / Input Video (*4)</td></tr>
<tr><td>Video output process</td></tr>
<tr><td>Digital audio</td></tr>
<tr><td>Servo system</td></tr>
</table>

*1: When the setup menu ITEM-309 is set to “AUTO 1”.
*2: When the setup menu ITEM-309 is set to “AUTO 2”.
*3: REF. VIDEO input
*4: The input video signal is selected by the VIDEO INPUT SELECT button on the upper control panel.

Audio Signal Independent Recording

Even if an input video signal is selected as the reference signal, the reference signal is automatically selected to an external reference video signal for the period in which the no input video signal is input. When no external reference video signal is input, the internal-generated reference signal is automatically selected for the period.
An audio signal can be independently recorded by this system even if no reference video signal is input from the outside.

Alarm Display for Video Input Signal and Reference Signal

1. Blink of the VIDEO INPUT SELECT indicator

The selected signal indicator blinks when signal is not input to the connector selected by the VIDEO INPUT SELECT button.

2. Blink of the STOP button

The button blinks when the reference signal is not locked to an input video signal.
(This function can be canceled in setup menu ITEM-105.)

- When the OUT REF switch is set to “INPUT VIDEO”:
  The STOP button blinks when the signal is not input to the connector selected by the VIDEO INPUT SELECT button.
- When the OUT REF switch is set to “REF”:
  The STOP button blinks in the following either cases.
  When no reference signal is input to REF. VIDEO connector.
  When the reference video signal (REF.VIDEO input) is not synchronized with an input video signal selected by the VIDEO INPUT SELECT button.

1-13. Settings and Adjustment when External Equipment is Connected

1-13-1. Settings for Time Code

Set the TC GENERATOR switches on the upper control panel as follows.

Case	TC GENERATOR switch	Setting	Remarks
When editing with an editor (BVE-2000, etc.) capable of the 1st edit	INT / EXT	INT	
	PRESET / REGEN	PRESET	
	FREE RUN / REC RUN	FREE RUN	
When editing with direct machine-to-machine (VTR-to-VTR)	INT / EXT	INT	The setup menu ITEM-610: REGEN CONTROL MODE must be set to “AS&IN”.
	PRESET / REGEN	PRESET	
	FREE RUN / REC RUN	REC RUN	

1-13-2. VTR Constant Values Settings of Editor

Set the VTR constant values according to the table below when the editor which needs the setting of VTR constant values is connected. Moreover, the change of VTR constant values are required when the 525/625 system is switched by setup menu of this unit.

Model name	525/625	VTR CONSTANT 1								VTR CONSTANT 2							
		Data No.								Data No.							
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
DNW-A75	525/60	B0	46	00	96	07	07	03	8A*	0A	07	FB	00	81	3D	FF	5A
DNW-A75P	625/50	B1	46	00	7D	07	07	03	8A*	0A	06	FB	00	83	4B	FF	4B

*: Set the data of No.8 of the VTR CONSTANT 1 to “0A” for the following editors.

- BVE-900 ROM versions earlier than 1.08
- BVE-600 ROM versions earlier than 1.01

Note

When remote-controlling this unit by the editor, set the setup menu ITEM-401: FUNCTION MODE AFTER CUE-UP to “STOP”.

1-13-3. System Phase Alignment

An external reference video signal and analog composite signal must be input to this unit after they are adjusted so that SC-H conforms to the specifications.

When Connecting to a Digital Switcher

Fundamentally, the system phase adjustment is not necessary.
Refer to the manual of digital switcher for details.

When Connecting to an Analog Switcher

Perform the system phase adjustment according to the manual of the analog switcher.

To adjust the system phase of this unit, use the SYNC and SC control knobs of SYSTEM PHASE on the sub control panel.

Notes

- Be sure to adjust in PB mode.
  The system phase does not change even if the SYNC/SC control is turned in the REC mode, but it changes when the REC mode is shifted to the PB mode.
- The playback sound may be momentarily interrupted when the SYNC/SC control knob is turned during tape playback.

1-13-4. Setup Menu Settings

Video/Sync Delay Setting “ITEM-701”

Commonly, when integrating the menu into the editing system, set to “VIDEO”.
To prevent the picture shift during EE/PB switching in the VTR-to-VTR edit operation, this setup menu is also set to “VIDEO”.

Analog Component Input/Output Format Setting “ITEM-709” (525/60 system only)

Set the input (SUB-ITEM-0) and output (SUB-ITEM-1) sides to “D-1” or “B-CAM” according to the operating system, respectively.

Section 2
Service Overview

2-1. Notes on Power Supply Block

2-1-1. Warning on Primary Circuit Block and Electric Shock

WARNING

The primary circuit consists of the AC-169 board with AC inlet, the circuit breaker, the POWER switch, and the power supply unit.
Be careful not to receive an electric shock when performing the maintenance and service works with the power turned on.
A primary voltage remains applied to the AC-169 board, circuit breaker, and POWER switch even if the POWER switch is turned off. For the work that requires no current conduction, therefore, turn off the POWER switch and disconnect the power cord.

2-1-2. Note on Resetting the Circuit Breaker

The circuit breaker of a primary circuit is mounted on the power panel of this unit. When an overcurrent flows in the primary circuit, the breaker operates and the button protrudes.
If the breaker operates, eliminate the cause for which an overcurrent flows, then push the button.

2-2. Cleaning when the Heads are Clogged

Clean using a cleaning cassette tape (specified product: BCT-5CLN) when the video heads are clogged.
For the cleaning, refer to “5-2-1. Cleaning using Cleaning Tape”.

WARNING

Clean the video heads in the prescribed procedure using a specified cleaning cassette tape. If not, the video heads may be abrasive or damaged.

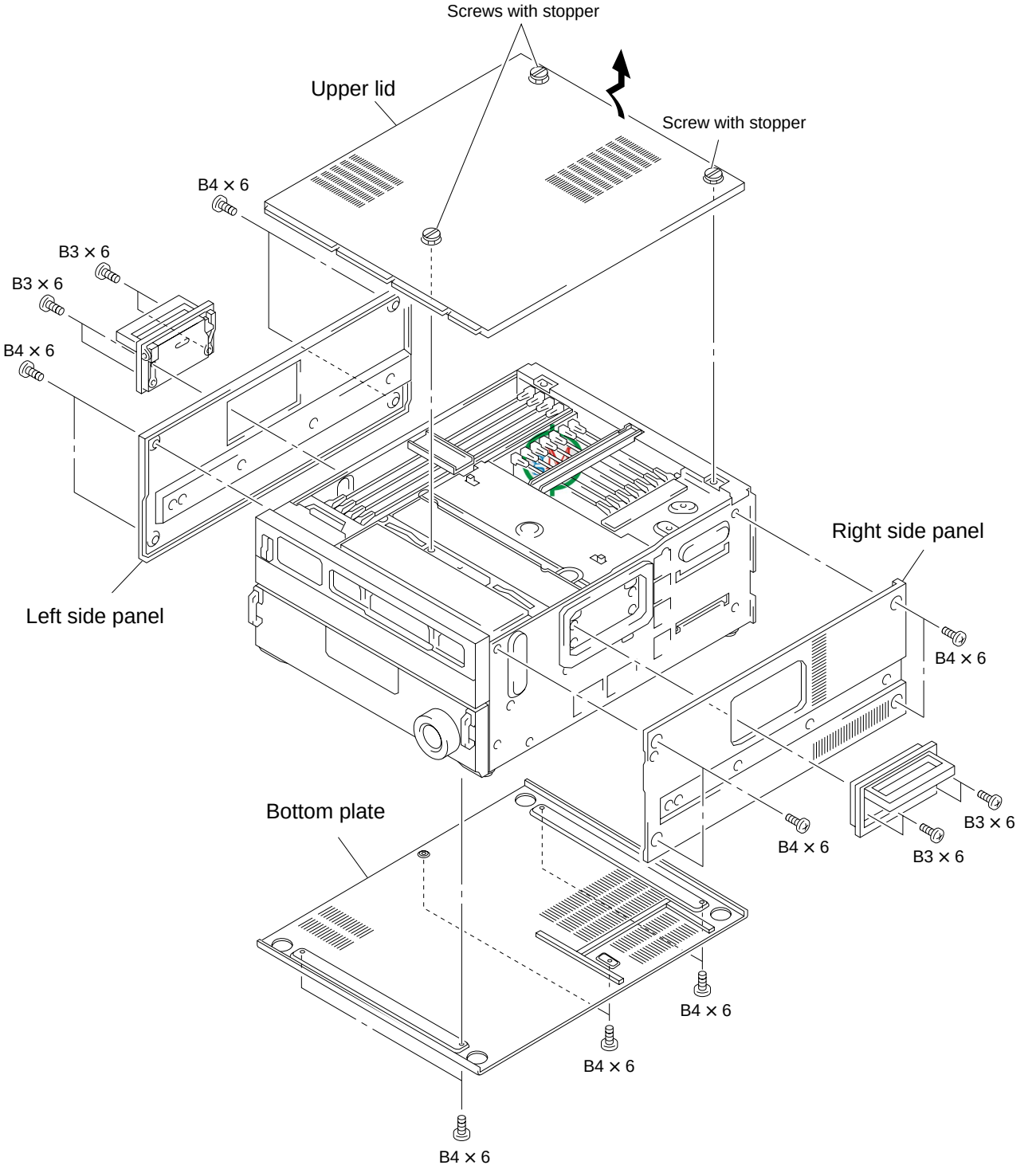
If the head clogging is not solved using a cleaning cassette tape, use cleaning cloth.
For the cleaning using a cleaning cloth, clean according to the procedure of “5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning” after confirming the cautions and preparation in “5-2-2. General Information for Cleaning using Cleaning Cloth”.

2-3. Removing/Reattaching Cabinet

2-3-1. Upper Lid, Side Panels, and Bottom Plate

Note

Turn off the power and unplug the power cord before removing/reattaching.



Upper Lid

1. Loosen the three fixing screws.
2. Remove the upper lid by moving in the direction indicated by the arrow.

When reattaching, install in the reverse order of removal.

Side Panels

(The right and left side panels are the same in procedure.)

1. Remove the four screws (B3 × 6), and remove the handle.
2. Remove the four screws (B4 × 6), and remove the side panel.

When reattaching, install in the reverse order of removal.

Bottom Plate

Note

With the handle attached, place the unit on its right side panel down for removal and installation. Lend your hand so that the lower handle does not hang down.

1. Remove the six screws (B4 × 6), and remove the bottom plate.

When reattaching, install in the reverse order of removal.

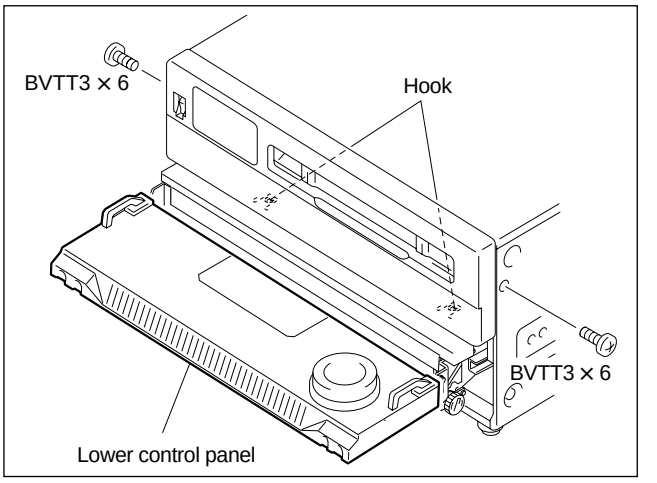
2-3-2. Control Panels

Note

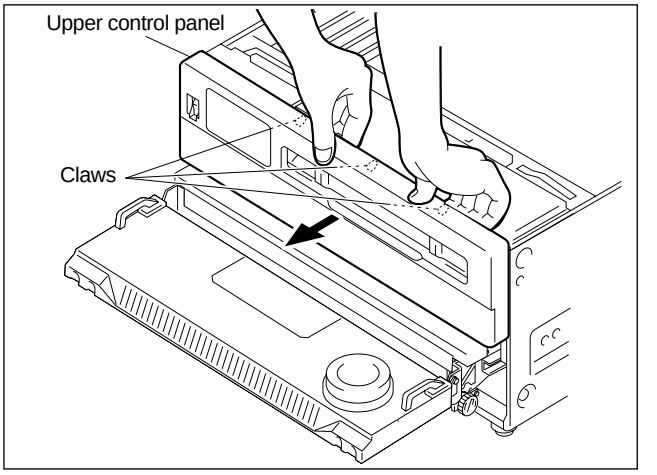
Turn off the power and unplug the power cord before removing/reattaching.

Upper Control Panel

1. Remove the upper lid. (Refer to Section 2-3-1.)
2. Remove the one screw each on the left and right sides.
3. Pull the lower control panel forward, then turn it upward. (Operation side up)
4. Unhook the two hooks at lower portion on the upper control panel.



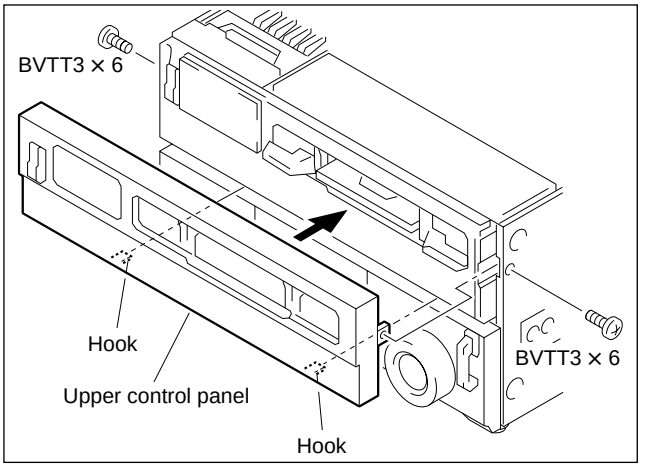
5. Unhook the claws at the upper control panel from the chassis, and remove in the direction of the arrow.



When reattaching, install in the reverse order of removal.

Note

Insert the hooks at the back of the panel into the convex portions of the chassis, then install the panel in the chassis. (Refer to the figure below.)



Note

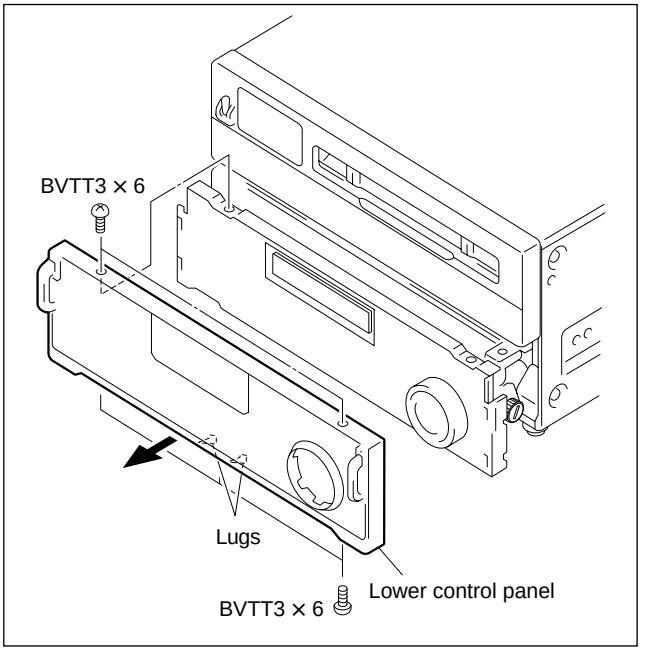
Turn off the power and unplug the power cord before removing/reattaching.

Lower Control Panel

1. Slightly pull the lower control panel forward, then pull it more strongly.
2. Remove the five screws on the top and bottom of the lower control panel.

   Note

   Open the lower control panel to facilitate removing the screws at the bottom of the panel.
3. Remove the two lugs at the back of the lower control panel.
4. Remove the lower control panel in the direction of the arrow.



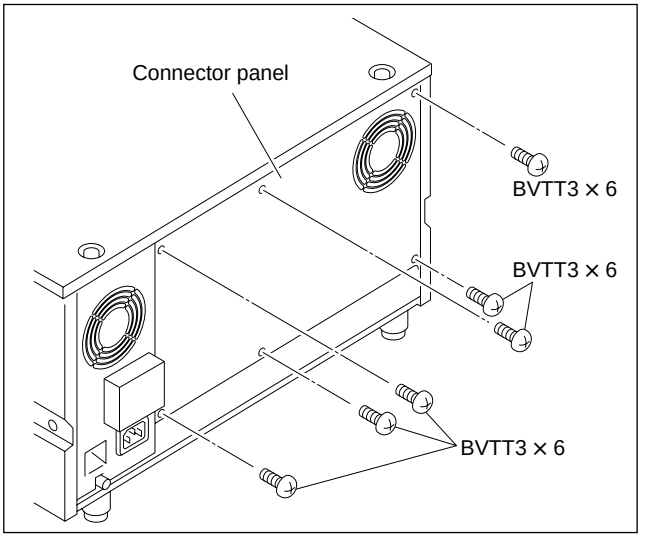
When reattaching, install in the reverse order of removal.

2-3-3. Connector Panel Assembly

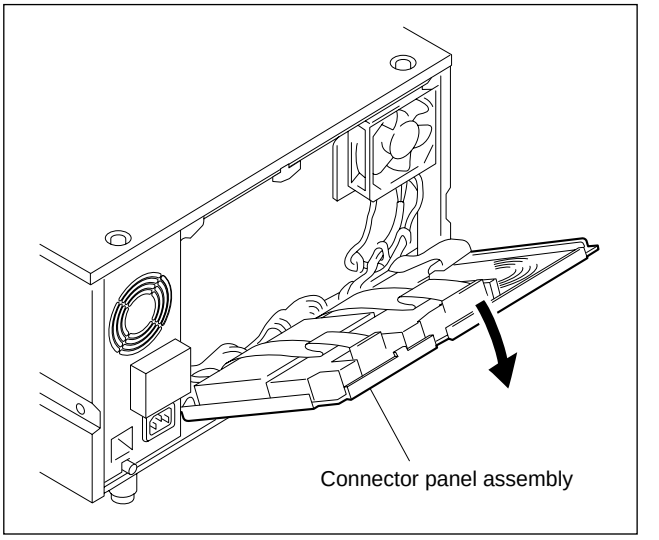
CAUTION

For your safety, turn off the power and unplug the power cord before removing/reattaching.

1. Remove the six screws indicated ⇒ on the connector panel.



2. Being careful not to stretch the harnesses, remove the connector panel assembly as shown in the figure.



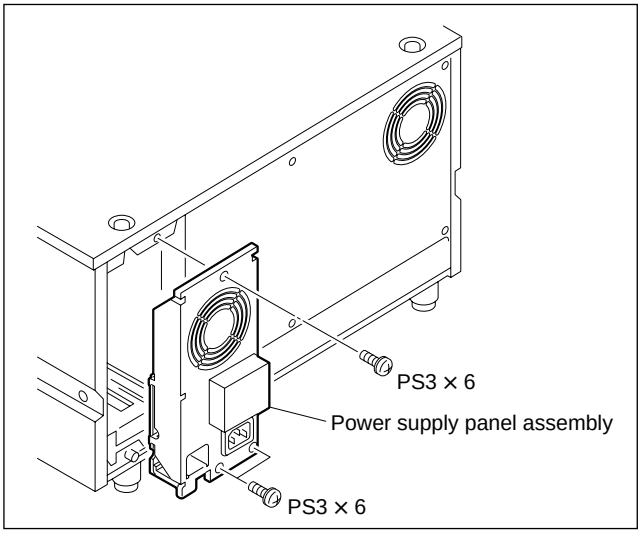
When reattaching, install in the reverse order of removal.

2-3-4. Power Supply Panel Assembly

CAUTION

For your safety, turn off the power and unplug the power cord before removing/reattaching.

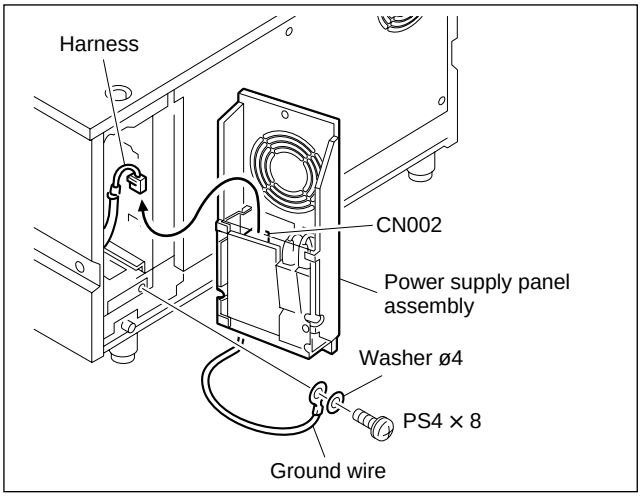
1. Remove the three screws, then pull the power supply panel assembly out.



2. Disconnect the harness from the connector (CN002) on the AC-169 board.
3. Remove the one screw fixing the ground wire to the chassis, then remove the power supply panel assembly.

Note

Be sure to remove the washer.



When reattaching, install in the reverse order of removal.

Note

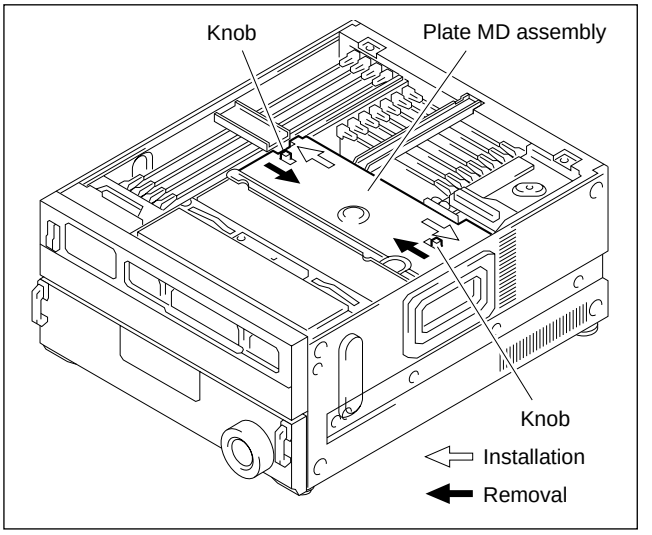
To fix the ground wire, put the washer between the terminal of ground wire and screw.

2-4. Removing/Reattaching Plate MD Assembly

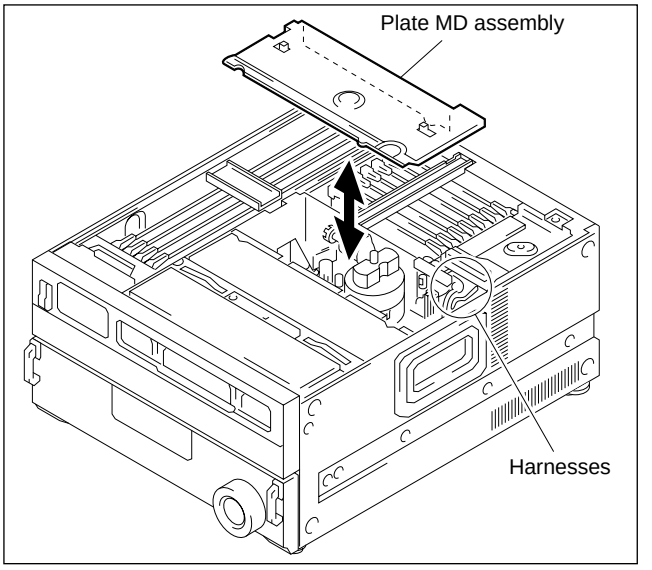
Note

Turn off the power and unplug the power cord before removing/reattaching.

1. Remove the upper lid. (Refer to Section 2-3-1.)
2. Slide the knobs on the plate MD assembly each in the inside. (Move the knobs to the outside to fix the plate MD assembly.)



3. Remove the plate MD assembly.



When reattaching, install in the reverse order of removal.

Note

Be careful not to pinch the harnesses under the plate MD assembly in reattaching.

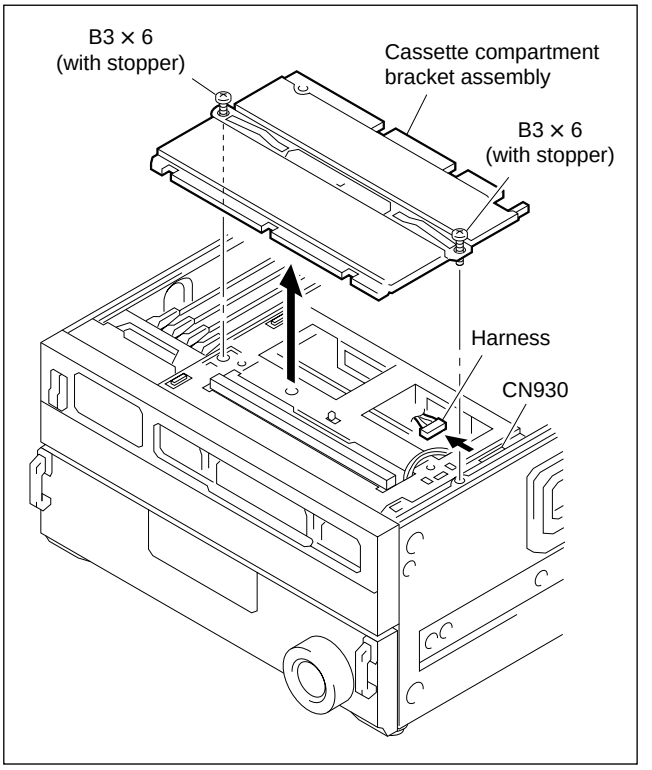
2-5. Removing/Reattaching Cassette Compartment

Notes

- Turn off the power and unplug the power cord before removing/reattaching.
- The cassette compartment cannot be removed with the cassette tape inserted. Press the EJECT button with the power turned on to eject the cassette tape.
  If the cassette compartment does not move due to an electric trouble, take out the cassette tape manually. (Refer to "2-12. Taking Out the Cassette in Tape Slacking".)

Removal

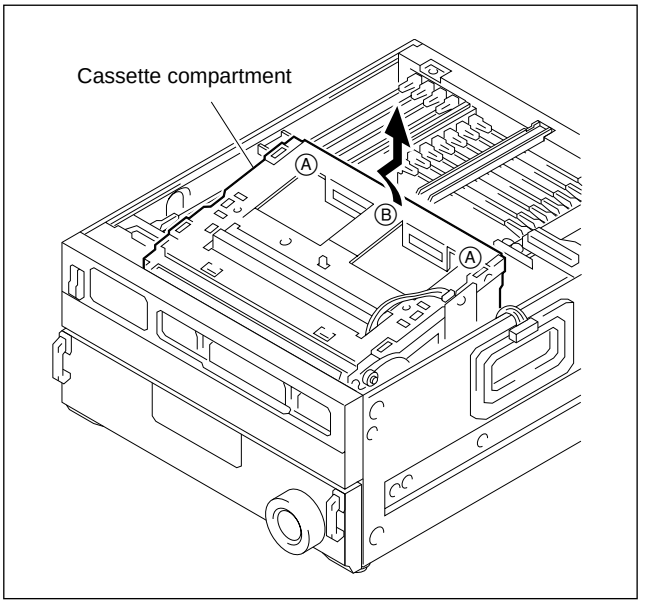
1. Remove the upper lid. (Refer to Section 2-3-1.)
2. Remove the plate MD assembly. (Refer to Section 2-4.)
3. Loosen the two screws, then remove the cassette compartment bracket assembly.
4. Disconnect the harness from the connector (CN930) on the CL-29 board. Keep the harness out of the way of the removal.



5. Hold the cassette compartment at the portions Ⓐ and lift up the cassette compartment slightly (by 1 cm). When the four cassette compartment positioning legs come off from the four positioning holes on a mechanical deck, shift the cassette compartment backward (by 1 cm) to the position where the cassette lid can be completely seen when viewed from just above.
6. Hold the cassette compartment at the portions Ⓑ, then slowly raise the cassette compartment upward to remove it.

Notes

- Being careful not to contact the gear on the right of the cassette compartment with the chassis, slowly raise the cassette compartment while slightly sliding it back-and-forth.
- Never move the cassette compartment to the right and left. If unnecessary force is applied to right and left, the gear or part may come off.
- Place the cassette compartment with the cassette lid up or with cassette compartment positioning legs down.
  (If it is put with the cassette lid down, the flexible card wire/board might be damaged.)



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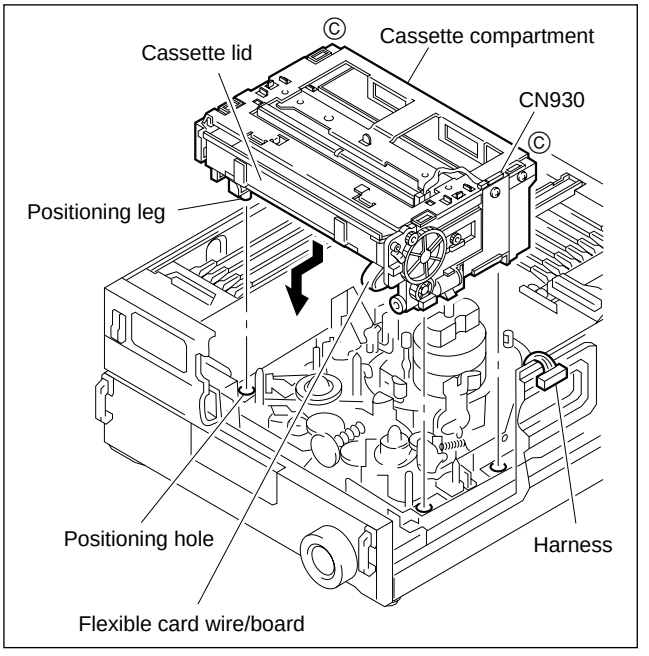
Installation

7. Place the cassette compartment into the unit in the direction as shown in the figure (with the cassette lid down).

Notes

- Being careful not to contact the gear on the right of the cassette compartment with the chassis, slowly insert the cassette compartment into the unit while slightly sliding it back-and-forth.
- Never move the cassette compartment to the right and left. If unnecessary force is applied to the right and left, the gear or part may come off.

8. Press the portions Ⓒ of the cassette compatment as shown in the figure, and then fit the four positioning legs into the four positioning holes in the mechanical deck.



9. Connect the harness to the connector (CN930) on the CL-29 board.
10. Reattach the cassette compartment bracket assembly.
11. Reattach the plate MD assembly and the upper lid.

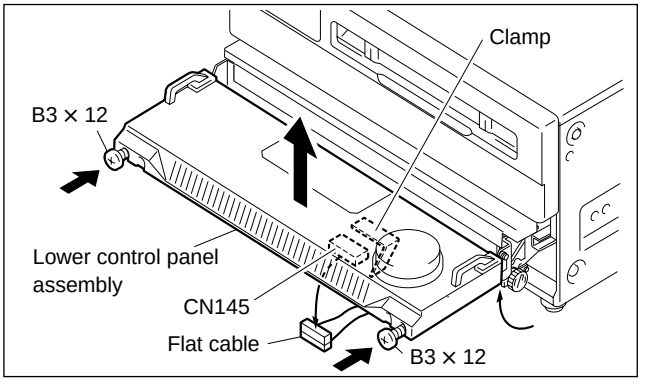
2-6. Removing/Reattaching Lower Control Panel Assembly

Note

Turn off the power and unplug the power cord before removing/reattaching.

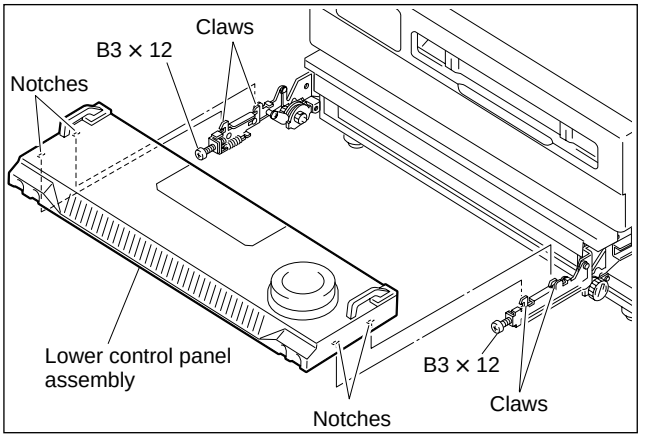
Removal

1. Pull the lower control panel forward, then turn it upward. (Operation side up)
2. Untie the flat cable from the clamp, then disconnect the flat cable from the connector (CN145) on the back of the lower control panel.
3. Loosen the two screws in bottom corners of the lower control panel assembly until screw's top are exposed from the lack of the panel assembly.
4. Push the loosened screws in the direction indicated by the arrow and raise the lower control panel assembly.



Installation

5. Set the notches of the panel assembly to the claws of the arms and insert the panel assembly until making a click sound.
6. Fix the lower control panel assembly with two screws.



7. Connect the flat cable to the connector (CN145), then tie the cable with the clamp.
8. Return the lower control panel to 0°, then store.

2-7. Circuit Function

System configuration	No.	Board name	Circuit function
Digital process	①	DPR-118	Digital data processor (Audio/Video processor)
	②	SDI-41	4:2:2 component serial digital interface with Embedded audio
Video process	③	*1 VPR-47	Video signal processor (D-A, Reference clock generator, Composite encoder)
	④	DEC-110	Analog composite decoder
Analog BETACAM video PB process	⑤	*1 DM-89	RF demodulator for Analog Betacam PB
	⑥	*1 TBC-24	TBC (A-D, Write clock generator)
	⑦	*1 TBC-23A	TBC (Sequence and Reference)
Audio process	⑧	*1 AU-260	Analog Betacam audio (LAU) PB circuit
	⑨	APR-40	Audio signal processor, AES/EBU interface
RF process	⑩	EQ-75	RF equalizer (REC current control, PB EQ, Analog BETACAM PB buffer, Inner error correction)
System/servo control	⑪	SS-83	System control, Servo control, DT control
	⑫	MS-58	Solenoids driver (Pinch, Brakes, Cleaning), Sensors input, Demagnetization head driver
	⑬	*1 DR-315	Motors driver (Drum, Capstan, Reels, Threading, Reel shift, Cassette up/down)
	⑭	TC-102	TC REC/PB circuit, TC/FULL erase OSC
	⑮	DT-34D	DT driver
Mech. deck driver/sensor	⑯	SE-461	Connection board with Condensation sensor
	⑰	PTC-54	Threading FG
	⑱	CCM-15	Threading motor
	⑲	CCM-15	Reel shift motor
	⑳	PD-35	Pinch solenoid connection, Tape end sensor connection
	㉑	TR-79	T tension sensor, Threading-end and Unthreading-end sensors
	㉒	PTC-59	Cassette's holes sensor
	㉓	*2 RM-82/181	T reel motor
	㉔	SE-344	T reel FG
	㉕	*2 RM-82/181	S reel motor
	㉖	SE-344	S reel FG
	㉗	PTC-71	Reel position sensors
	㉘	TR-78	S tension sensor

∗1: The full name of each mounted board is as follows:

Model name	VPR-47	DM-89	TBC-24	TBC-23A	AU-260	DR-315
DNW-A75	VPR-47	DM-89	TBC-24	TBC-23A	AU-260	DR-315K
DNW-A75P	VPR-47P	DM-89P	TBC-24P	TBC-23AP	AU-260P	DR-315K

∗2: Either the RM-82 or the RM-181 board is used.

System configuration	No.	Board name	Circuit function
Cassette compartment	㉙	CL-29	Cassette up/down motor, Cassette down sensors
	㉚	LP-81	Lamp of cassette compartment
	㉛	PC-70	Cassette-in sensors, Cassette size sensor
Front panel	㉜	FP-117	Panel function (Switches, LEDs) control, CAV control level conversion
	㉝	*3 VR-223	Audio REC level VRs, Video input level VR, Phone level VR, Phone connector
	㉞	*3 VR-224	Audio PB level VRs
	㉟	SWC-35	Upper control panel function (Switches, LEDs)
	㊱	*3 SWC-31	Sub control panel function
	㊲	KY-438	Lower control panel function
	㊳	PTC-69	Search dial sensor, Dial solenoid connection
Motherboard, connector panel	㊴	MB-818	Motherboard, Remote control connectors (REMOTE1 (9P), RS-232C, VIDEO CONTROL, CONTROL PANEL)
	㊵	CP-334	Connector board (Analog video) with input/output buffer
	㊶	*3 CP-278	Connector board (Analog audio input/output)
	㊷	CP-335	Connector board (AES/EBU input/output)
	㊸	*3 CP-301	Connector board (TC input/output, MONITOR output)
	㊹	*4 RM-130/190	Parallel (50-pin) remote interface, Remote control connector [REMOTE 2 PARALLEL (50P)], NV-RAM (RM-190 board only)
	㊺	*5 RM-179	NV-RAM for Parallel (50-pin) remote interface
Power	㊻	*3 AC-169	AC connector board with Breaker
	㊼	PS unit	Switching regulator (PS=Power supply)
Option	㊽	DPR-119	SDTI (SX) output interface (optional kit BKNW-118)
	㊾	DPR-150	SDTI-CP output interface (optional kit BKNW-124)

∗3: The full name of each mounted board is as follows:

Model name	VR-223	VR-224	SWC-31	CP-278	CP-301	AC-169
DNW-A75	VR-223K	VR-224K	SWC-31K	CP-278K	CP-301K	AC-169K
DNW-A75P	VR-223K	VR-224K	SWC-31K	CP-278K	CP-301KP	AC-169K

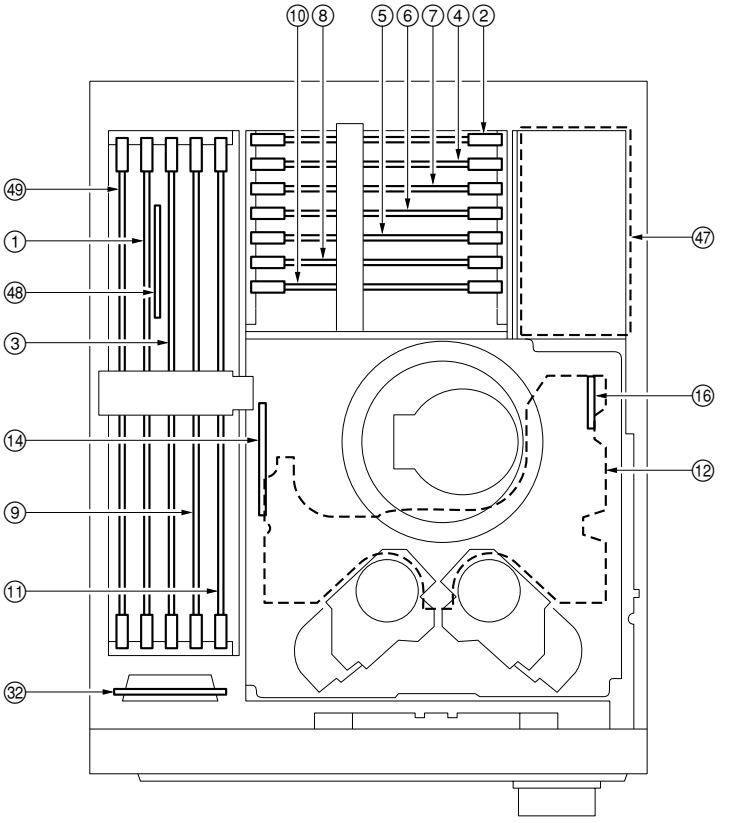
∗4: Either the RM-130 or the RM-190 board is used.
∗5: The RM-179 board is on the RM-130 board.

Board	DNW-A75	DNW-A75P
RM-130 and RM-179	S/N 10001 to 14820	S/N 40001 to 43498
RM-190	S/N 14821 and higher	S/N 43499 and higher

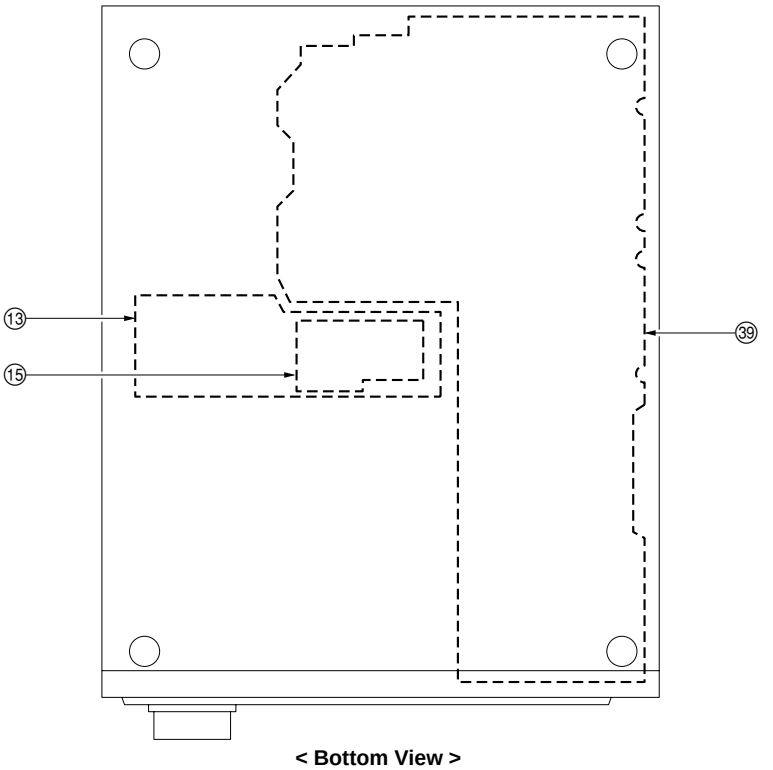
2-8. Location of Main Parts

2-8-1. Printed Circuit Boards and Power Supply Unit Locations

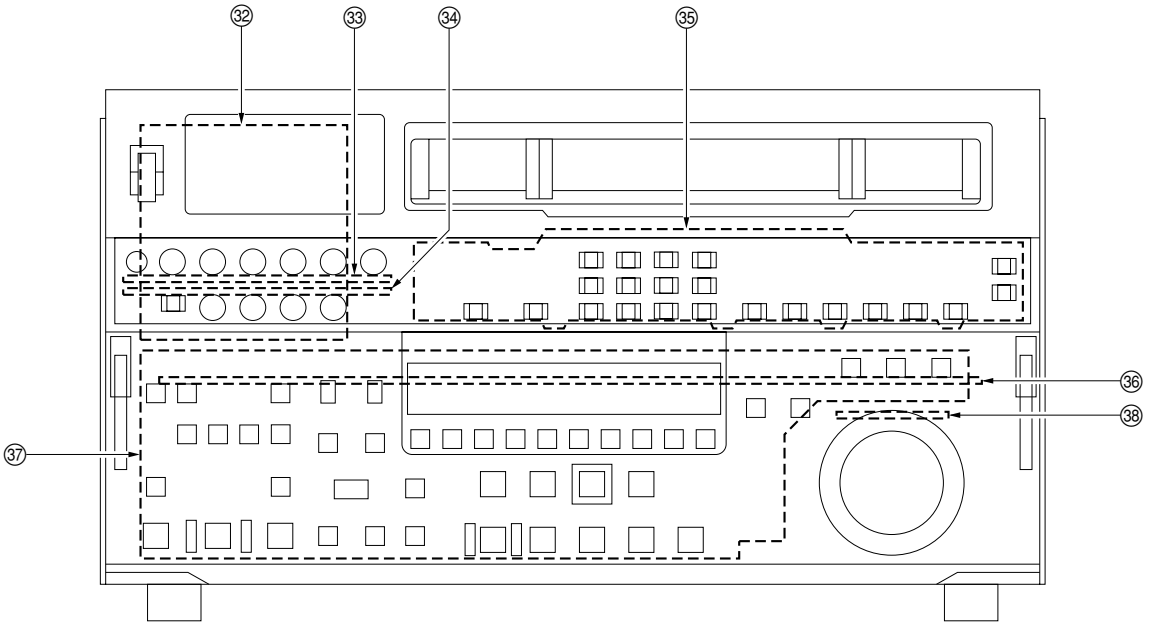
AC-169 ..... ㊻
APR-40 ..... ⑨
AU-260 ..... ⑧
CCM-15 ..... ⑱⑲
CL-29 ..... ㉙
CP-278 ..... ㊶
CP-301 ..... ㊸
CP-334 ..... ㊵
CP-335 ..... ㊷
DEC-110 ..... ④
DM-89 ..... ⑤
DPR-118 ..... ①
DPR-119 ..... ㊽ (BKNW-118)
DPR-150 ..... ㊾ (BKNW-124)
DR-315 ..... ⑬
DT-34D ..... ⑮
EQ-75 ..... ⑩
FP-117 ..... ㉜
KY-438 ..... ㊲
LP-81 ..... ㉚
MB-818 ..... ㊴
MS-58 ..... ⑫
PC-70 ..... ㉛
PD-35 ..... ⑳
PTC-54 ..... ⑰
PTC-59 ..... ㉒
PTC-69 ..... ㊳
PTC-71 ..... ㉗
RM-130/190 ..... ㊹
RM-179 ..... ㊺ (on the RM-130 board)
RM-82/-181 ..... ㉓ ㉕
SDI-41 ..... ②
SE-344 ..... ㉔ ㉖
SE-461 ..... ⑯
SS-83 ..... ⑪
SWC-31 ..... ㊱
SWC-35 ..... ㉟
TBC-23A ..... ⑦
TBC-24 ..... ⑥
TC-102 ..... ⑭
TR-78 ..... ㉘
TR-79 ..... ㉑
VPR-47 ..... ③
VR-223 ..... ㉝
VR-224 ..... ㉞
Power supply unit ... ㊼



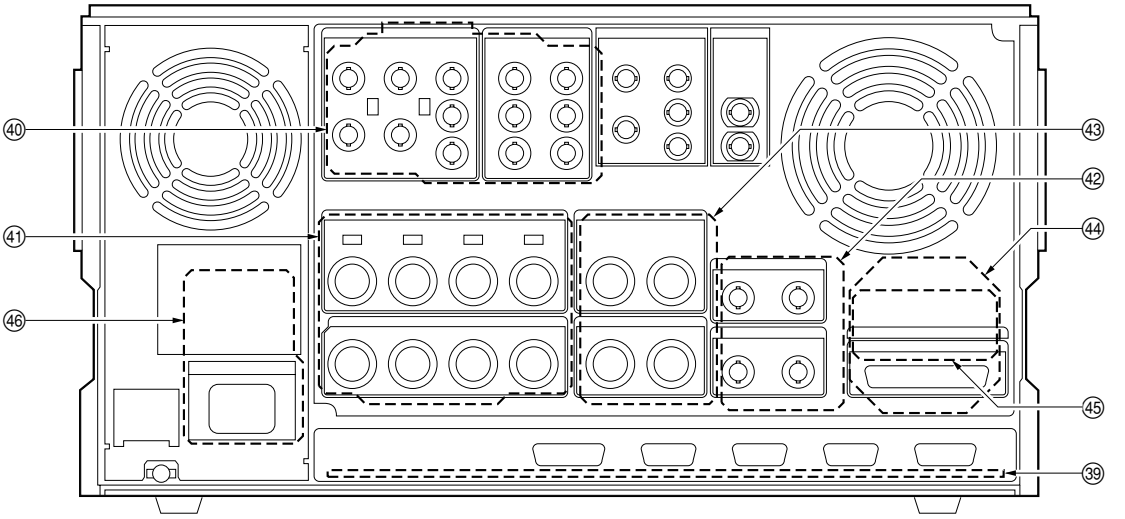
< Top View >



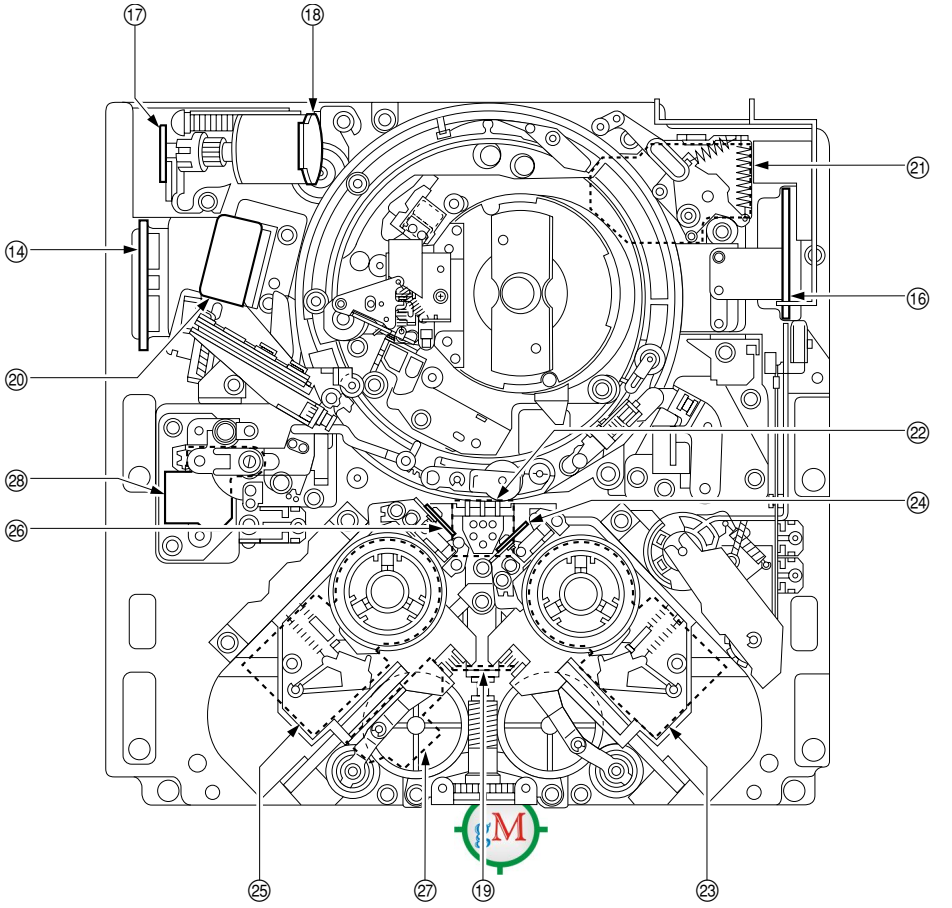
< Bottom View >



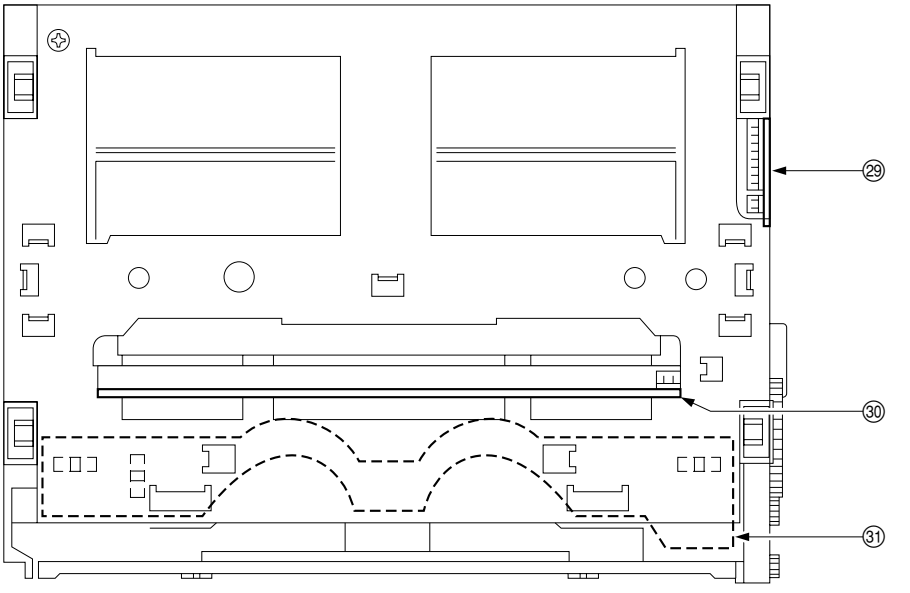
< Front View >



< Rear View >

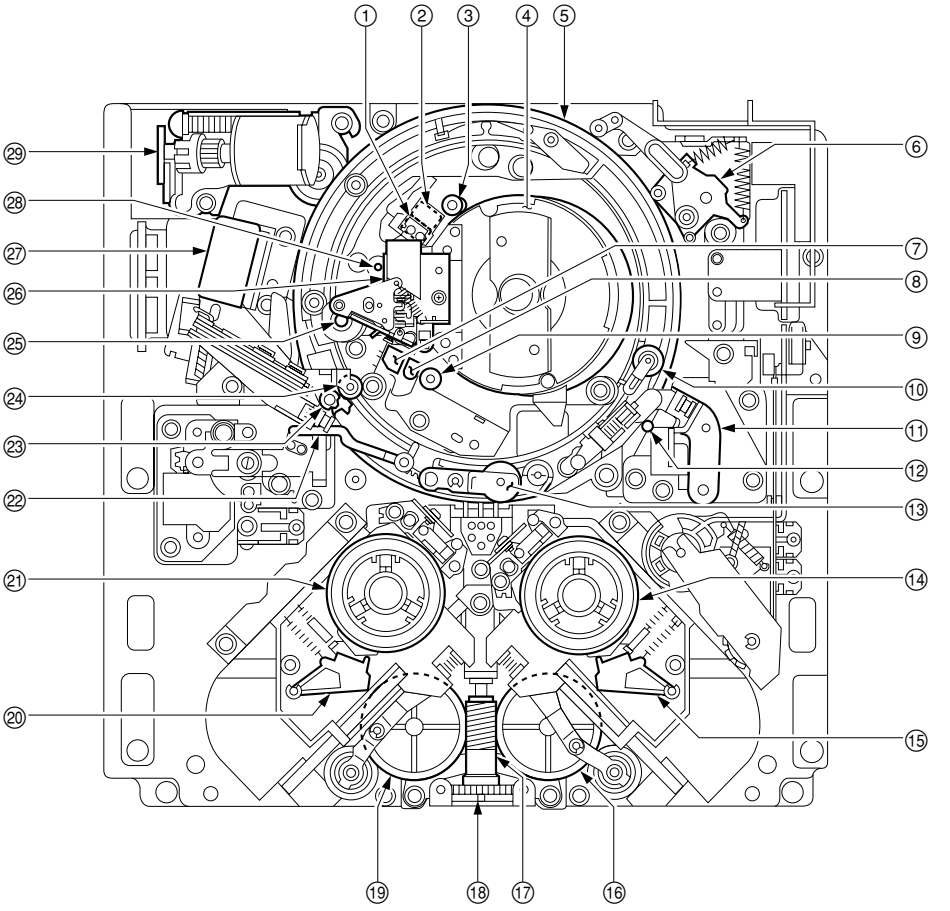


< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

2-8-2. Main Mechanical Part Locations

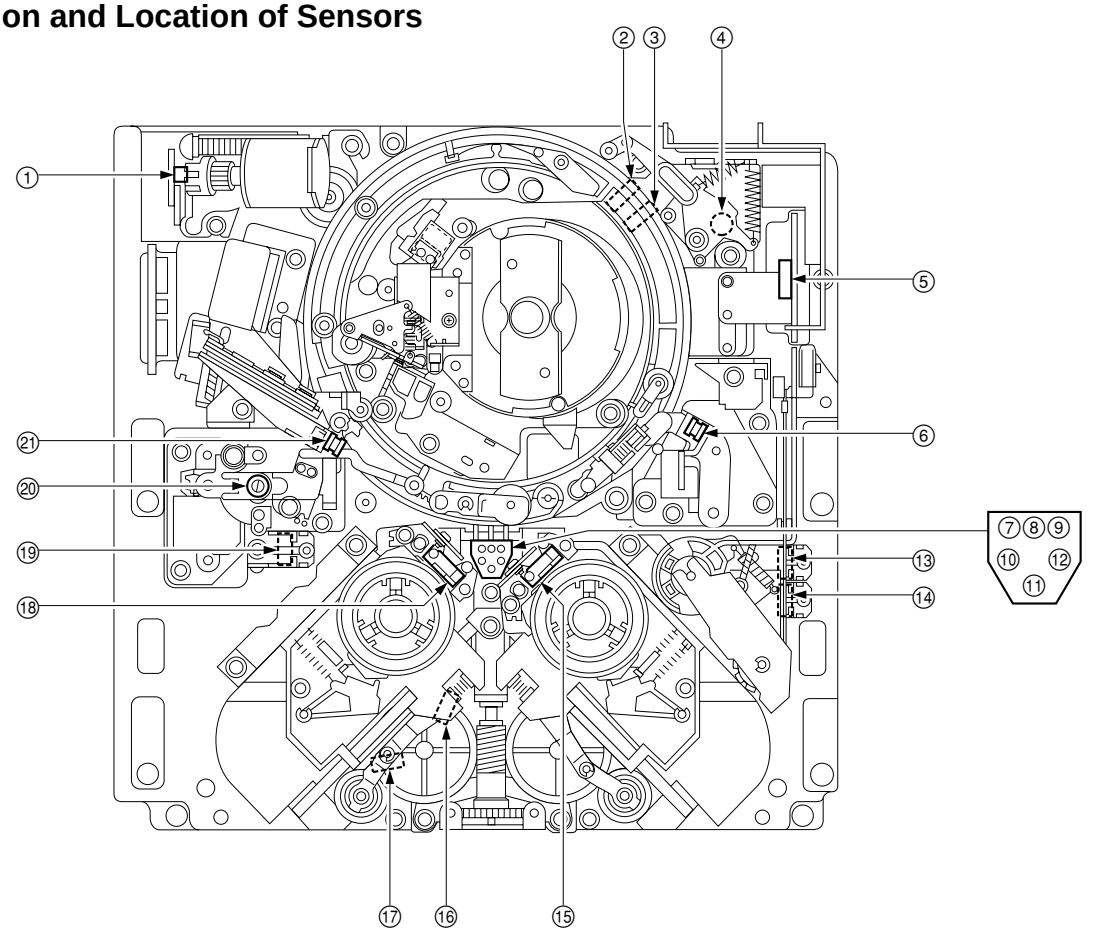


< Top View of Mechanical Deck >

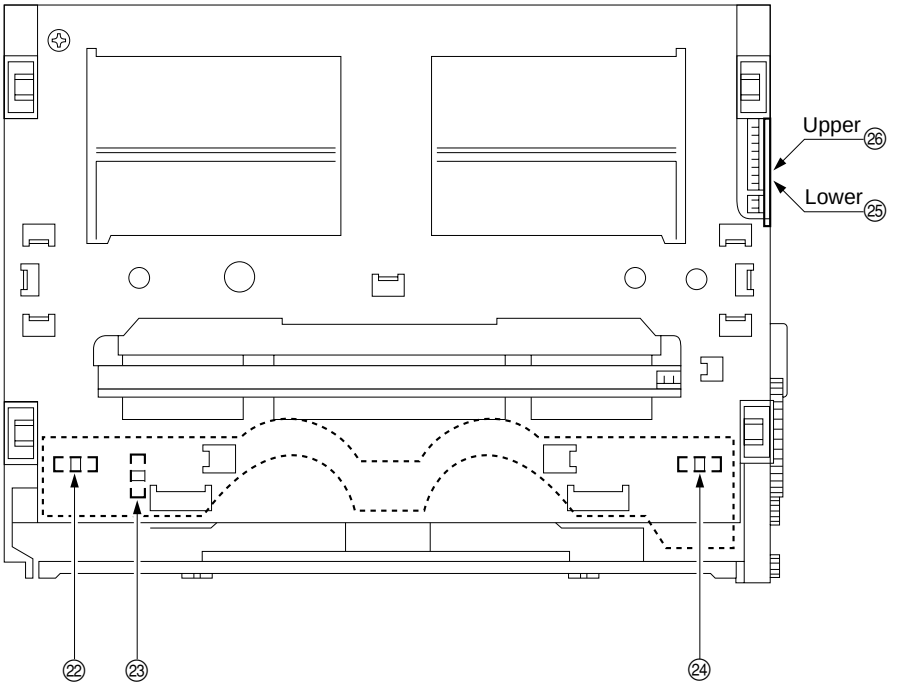
INDEX

① Audio/TC head
② Audio/TC erase head
③ TG-3 tape guide
④ Head drum
⑤ Threading ring
⑥ T tension regulator arm
⑦ Full-erase head
⑧ CTL head
⑨ TG-2 tape guide
⑩ Audio/TC head cleaner
⑪ T drawer arm
⑫ TG-10 tape guide
⑬ Pinch roller
⑭ T reel table
⑮ T brake assembly
⑯ T worm wheel
⑰ Worm gear
⑱ Drive gear
⑲ S worm wheel
⑳ S brake assembly
㉑ S reel table
㉒ S tension regulator
㉓ Tape cleaner
㉔ TG-0 tape guide
㉕ Capstan shaft
㉖ Cleaning roller block
㉗ Pinch press block
㉘ TG-4 tape guide
㉙ Threading gear block

2-9. Function and Location of Sensors



< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

① **Threading motor FG sensor**
This sensor detects the rotation speed of the threading motor. The output signal of this sensor enters the threading motor servo circuit, and controls the threading/unthreading speed to protect the tape during threading and unthreading operation.

② **Unthreading-end sensor**
③ **Threading-end sensor**
These sensors detect whether the threading ring reaches the threading-end or unthreading-end position.

④ **T tension regulator arm sensor**
This sensor detects the position of a T tension regulator arm. During recording and playback, the output signal of this sensor enters the T reel motor servo circuit, and controls the reel torque to keep a constant T tape tension.

⑤ **Condensation sensor**
This sensor detects whether the dew condensation occurs in the unit.

⑥ **Tape top sensor**
This sensor detects the beginning of the tape, and in addition detects the end of the tape that runs in the reverse direction.

⑦ **Reel hub diameter sensor**
This sensor detects the reel hub diameter detection tab of a cassette.
The reel hub with two types of diameters (thin and thick) is available according to the length of a tape stored in a cassette. This sensor is used to discriminate the diameter. The output signal of this sensor enters the servo circuit of take-up and supply reel motors, and controls the reel rotation speed and torque during tape transport.

⑧ **Metal/oxide tape sensor**
This sensor detects the metal tape detection tab of a Betacam/Betacam SP cassette.
This sensor is used to discriminate whether the tape stored in a Betacam/Betacam SP cassette is an oxide tape or metal particle tape.

⑨ **Tape thickness sensor**
This sensor detects the tape thickness detection tab of a cassette.
This sensor is used to discriminate the thickness of the tape stored in a cassette.

⑩⑪⑫ **Cassette classification sensors**
These sensors detect the three cassette type detection tabs of a cassette.
These sensors are used to discriminate whether a cassette can be used in this unit.

⑬ **L cassette (SP) REC inhibit sensor**
This sensor (switch) detects the condition of a REC inhibit plug for the Betacam/Betacam SP large cassette.

⑭ **L cassette (SX) REC inhibit sensor**
This sensor (switch) detects the condition of a REC inhibit plug for the Betacam SX large cassette.

⑮ **T reel table FG sensor**
This sensor detects the rotation speed of the take-up reel motor. The output signal of this sensor enters the reel motor servo circuit, and controls the reel table rotation speed.

⑯ **Reel S position sensor**
⑰ **Reel L position sensor**
These sensors detect whether the reel table moves to the correct position according to the size of the inserted cassette.

⑱ **S reel table FG sensor**
This sensor detects the rotation speed of the supply reel motor. The output signal of this sensor enters the reel motor servo circuit, and controls the reel table rotation speed.

⑲ **S cassette REC inhibit sensor**
This sensor (switch) detects the condition of a REC inhibit plug for the small cassette.

⑳ **S tension regulator arm sensor**
This sensor detects the position of an S tension regulator arm. During recording and playback, the output signal of this sensor enters the S reel motor servo circuit, and controls the reel torque to keep a constant S tape tension.

㉑ **Tape end sensor**
This sensor detects the end of the tape that runs in the forward direction.

㉒ **Cassette-in sensor (L)**
This sensor detects whether a cassette is being inserted.

㉓ **Cassette size sensor**
This sensor detects whether the inserted cassette is L size or S size.

㉔ **Cassette-in sensor (R)**
This sensor detects whether a cassette is being inserted.

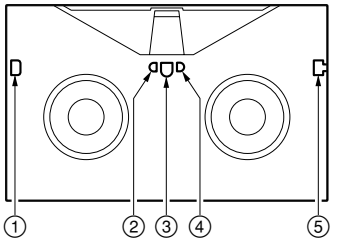
㉕ **Cassette-down (2) sensor**
㉖ **Cassette-down (1) sensor**
These sensors detect the movement (position) of a cassette compartment by the combination of the detection state of the two sensors and a cassette-in sensor.

2-10. System of Cassettes

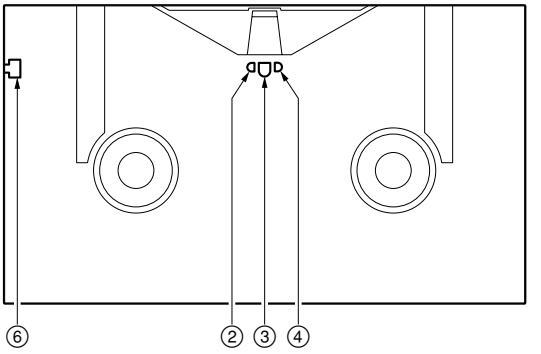
As shown in the figure below, plugs and tabs are provided at the back side of the cassette tape.

Cassette for Betacam or Betacam SP

Small cassette (S cassette)



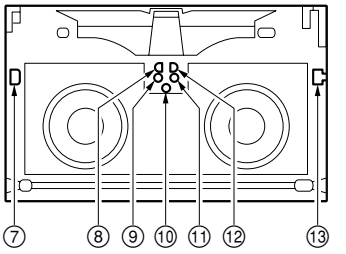
Large cassette (L cassette)



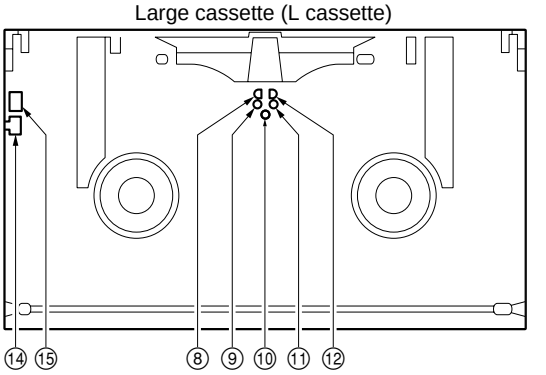
① S cassette REC inhibit tab (for oxide tape)
② Tape thickness detection tab
③ Metal tape detection tab
④ Reel hub diameter detection tab
⑤ S cassette REC inhibit plug (for metal particle tape)
⑥ L cassette REC inhibit plug

Cassette for Betacam SX

Small cassette (S cassette)



Large cassette (L cassette)



⑦ S cassette analog REC inhibit hole
⑧ Tape thickness detection tab
⑨⑩⑪ Cassette classification detection tabs
⑫ Reel hub diameter detection tab
⑬ S cassette digital REC inhibit tab
⑭ L cassette digital REC inhibit tab
⑮ L cassette analog REC inhibit hole

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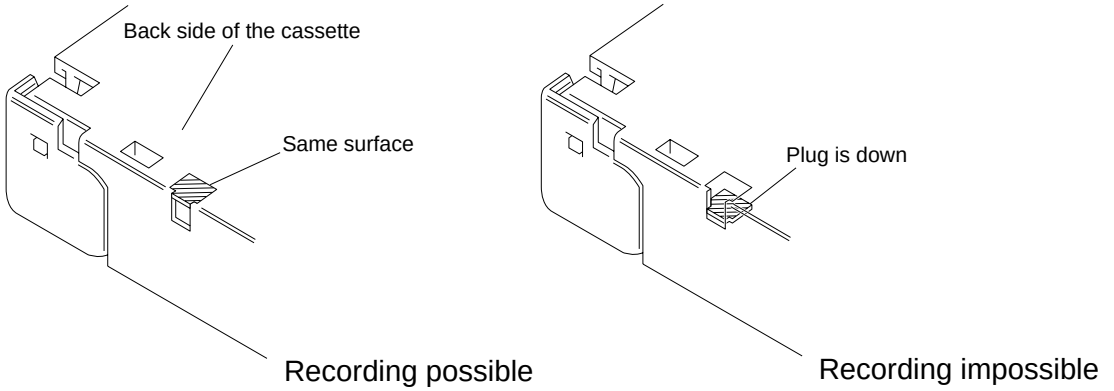
REC Inhibit Plugs



Detection Tabs

In cassette for Betacam or Betacam SP

No.	Usage	With Tab (Close hole)	Without Tab (Open hole)
②	Tape thickness detection	Thick (Tape thickness is 20 µm)	Thin (Tape thickness is 15 µm)
③	Metal tape detection	Oxide tape	* Metal particle tape
④	Reel hub diameter detection	Small hub	Large hub

* : For the metal particle tape, digital recording can be performed using a Betacam SX format.

In cassette for Betacam SX

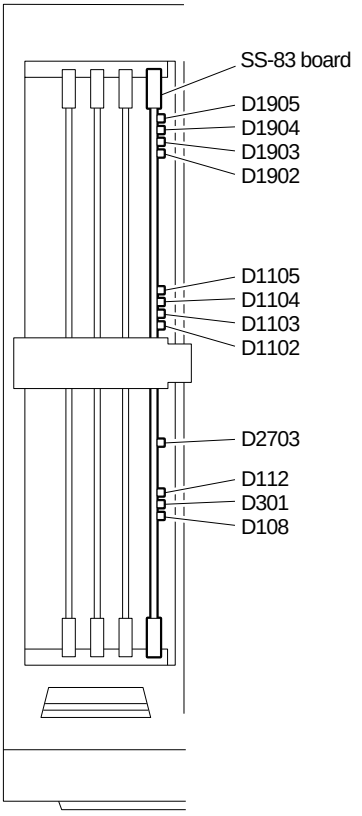
No.	Usage	With Tab (Close hole)	Without Tab (Open hole)
⑧	Tape thickness detection	Tape thickness is 14.5 µm	Tape thickness is other than 14.5 µm
⑫	Reel hub diameter detection	Small hub	Large hub
⑨⑩⑪	Cassette classification detection	Without tab (open hole) at only ⑨ for Betacam SX cassette. Represents the cassette classification by combination of three tabs. (See below)	

Cassette classification detection tabs

○ : with tab (close hole), ● : without tab (open hole)

State of Tabs ⑨ ⑪ ⑩	Cassette Class	Remark
○○	Betacam or Betacam SP	———
●○	Betacam SX	———
○●	Digital Betacam	Unusable
●●, ○●, ●○, ○●, ●●	Except the above class	Unusable

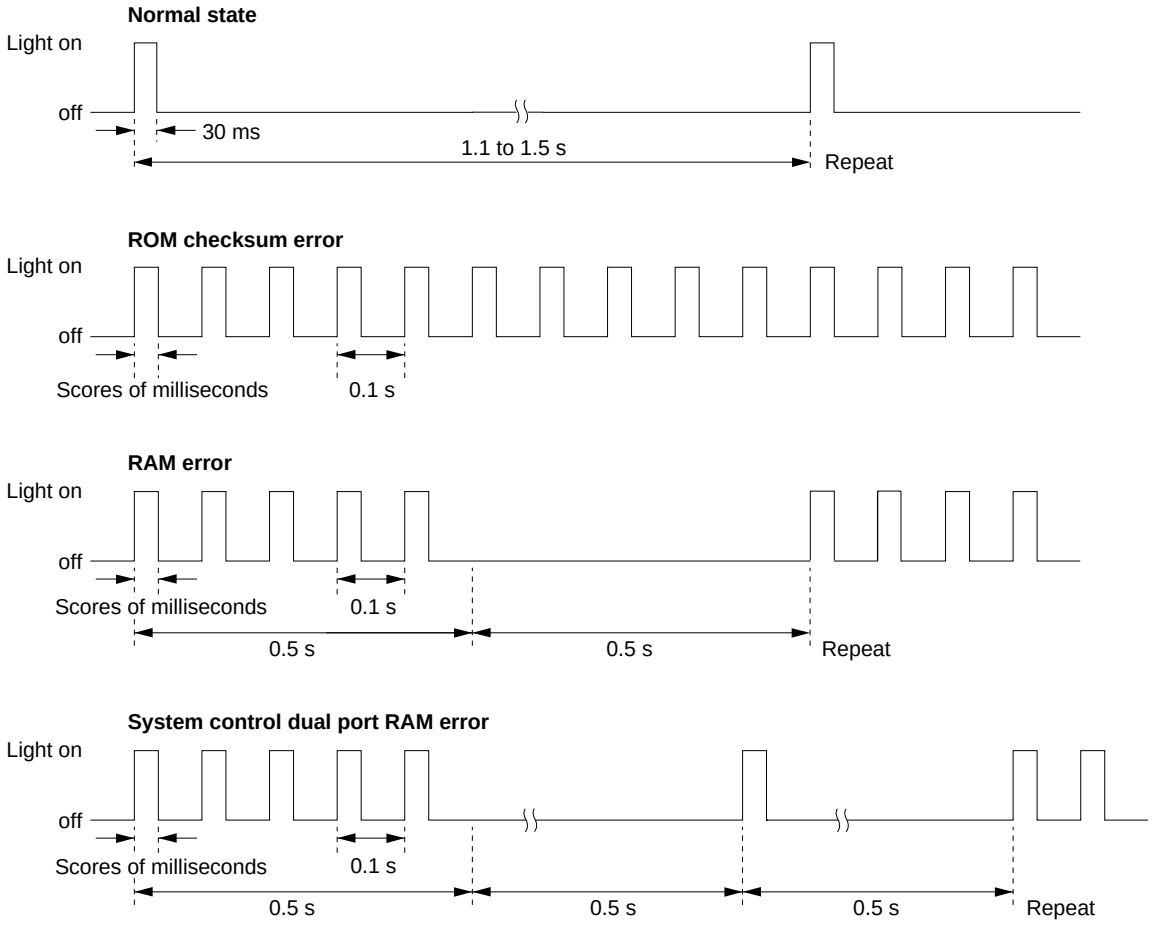
2-11. Function of LEDs on Circuit Boards

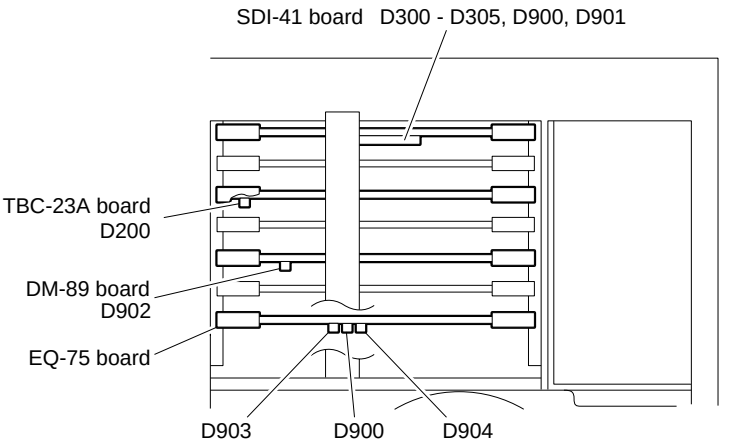


SS-83 board

LED No.	Name	Color	Description	Normal state
D108	SV	Amber	Represents the result of communication test of ROM and RAM in power-on by blinking pattern. (Refer to followings.)	Blinks
D112	TRVR	Amber	Lights when the tracking VR is enable.	Off
D301	DRUM	Amber	Blinks when the drum microcomputer (IC314) operates normally. Usually lights for 30 milliseconds at intervals of 1.1 to 1.5 second. The blinking interval is inverted when the drum is locked.	Blinks
D1102	SY1 STS1	Green	Blinks when SYS1 CPU operates normally.	Blinks
D1103	SY1 STS2	Green	Lights in good communications between SYS1 CPU and KY MPU (KY-438 board). Turns off in bad communications between SYS1 CPU and KY MPU (KY-438 board).	On
D1104	MAINTE	Green	Lights during executing maintenance mode.	Off
D1105	SY1 ERR	Red	Lights when SYS1 CPU does not operate normally. Blinks in bad communications between SYS1 CPU and other CPU/MPU (SYS2, KY, etc.).	Off
D1902	SY2 STS1	Green	Blinks when SYS2 CPU operates normally.	Blinks
D1903	SY2 STS2	Green	Lights in good communications between SYS2 and SV CPUs. Turns off in bad communications between SYS2 and SV CPUs.	On
D1904	SY2 STS3	Green	Lights in good communications between SYS2 and SYS1 CPUs. Turns off in bad communications between SYS2 and SYS1 CPUs.	On
D1905	SY2 ERR	Red	Lights when SYS2 CPU does not operate normally. Blinks in bad communications between SYS2 CPU and other CPU (SYS1, SV, etc.).	Off
D2703	DT	Amber	Blinks when DT MPU (IC2700) operates normally.	Blinks

Blinking patterns of D108 on SS-83 board





DM-89 board

LED No.	Name	Color	Description	Normal state
D902	ADJUST	Amber	Usually lights for scores of milliseconds at intervals of about one second. The blinking interval is inverted when the DM-89 board is in the adjustment mode: when switch S901-No.1 on DM-89 board is set to ON.	Blinks

EQ-75 board

LED No.	Name	Color	Description	Normal State
D900	—	Amber	Blinks during the EQ microcomputer is under normal operation. Lights in the following cases: • NV-RAM checksum error (when writing/reading in power-on) • NV-RAM verify error (when saving NV-RAM) • INNER ECC status error • REC data parity error • Not satisfied requirements in auto-alignment (exclusive of failure and NG) • Not started communications with SYSCON	Blinks
D903	—	Red	Lights in REC mode.	On/Off
D904	—	Green	Lights in Analog Playback mode. (The unit automatically switches to analog playback mode and light the indicator when the cassette is ejected.)	On/Off

TBC-23A board

LED No.	Name	Color	Description	Normal state
D200	TBC	Amber	Lights once a second when TBC microcomputer is under normal condition.	Blinks

SDI-41 board

LED No.	Name	Color	Description	Normal state
D300	SDI INPUT EXIST	Green	Lights when detected that the SDI format signal exists in the SDI INPUT connector.	On
D301	RX EDH VALIDITY	Green	Lights when the signal received by the SDI INPUT connector conforms to the EDH.	On
* D302	RX EDH OTHER ANC ERROR	Red	Lights when other ancillary data exists in the EDH block of the signal received by the SDI INPUT connector.	Off
* D303	RX EDH AP ERROR	Red	Lights when an active picture EDH error is detected from the signal received by the SDI INPUT connector.	Off
* D304	RX EDH FF ERROR	Red	Lights when a full-field EDH error is detected from the signal received by the SDI INPUT connector.	Off
* D305	RX EDH ANC ERROR	Red	Lights when an ancillary data EDH error is detected from the signal received by the SDI INPUT connector.	Off
D900	SDI TRS	Green	Lights when the SDI INPUT connector can receive the SDI format signal normally.	On
D901	VCO ADJ	Green	Lights when electronic volume (EVR) data comes near the proper value during VCO free-running adjustment in the maintenance mode.	Off

*: These LEDs operate when the received signal conforms to the EDH.
(EDH: Error Detection and Handling)

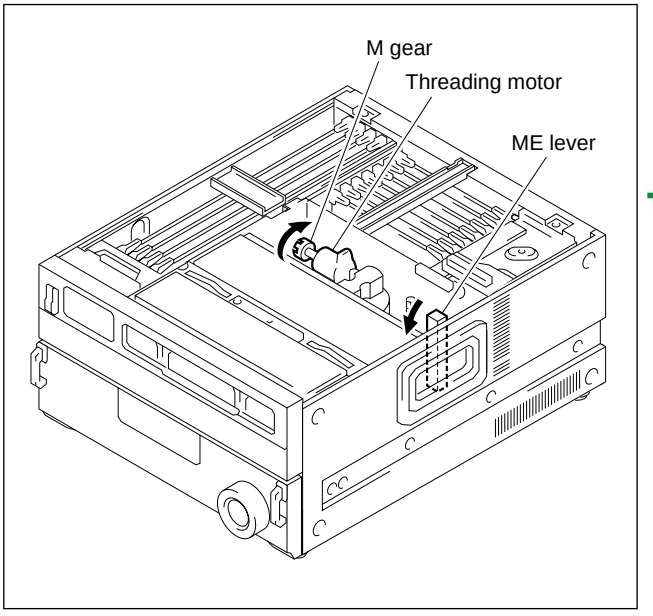
2-12. Taking Out the Cassette in Tape Slacking

When the tape is slacked in this unit, follow the steps below to take out the cassette tape.

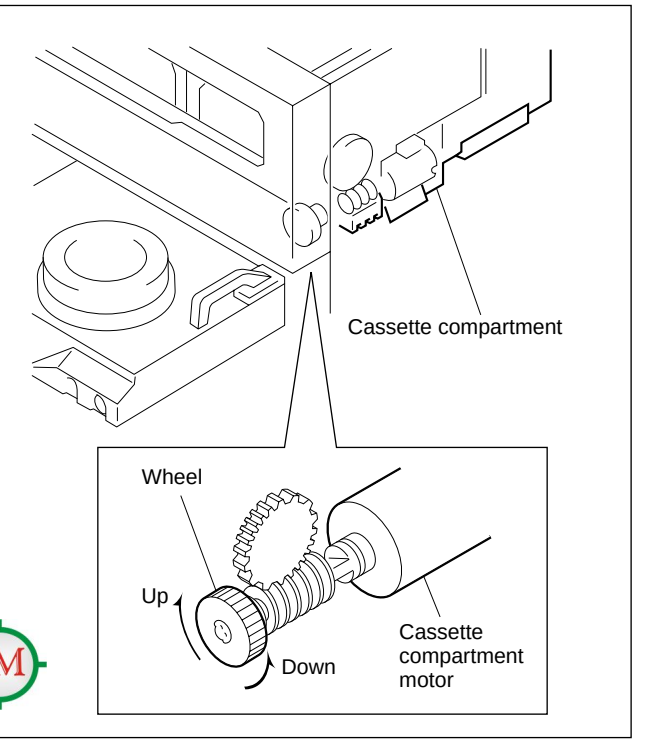
Note

Being careful not to damage the tape, take out the cassette tape with care.

1. Turn off the power.
2. Remove the upper lid. (Refer to Section 2-3-1.)
3. Remove the plate MD assembly. (Refer to Section 2-4.)
4. Rotate the M gear of the threading motor block in the direction of the arrow with the fingers by about a half turn to slack off the tape.
5. Pull the ME lever toward the front panel side to take up the tape inside the cassette.



6. To wind up the tape, repeat steps 4 and 5.
7. Turn the lower control panel upward. (Operation side up)
8. Turn the wheel of the cassette compartment motor clockwise as shown in the figure until the cassette is completely ejected.

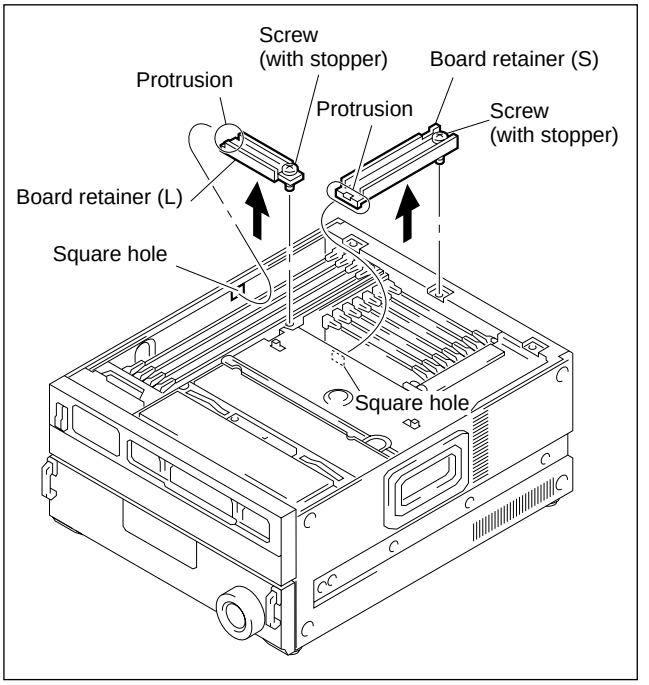


2-13. Removing/Reattaching Plug-in Boards

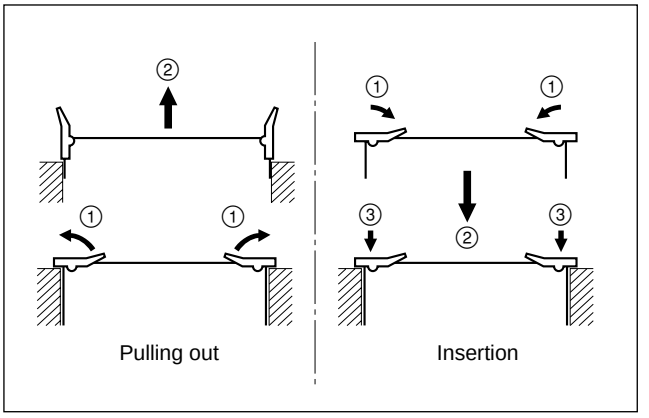
Note

When the plug-in board is replaced, refer to "6-3. Plug-in Boards List".

1. Turn off the power.
2. Remove the upper lid. (Refer to Section 2-3-1.)
3. To remove the board retainer (L) or (S), fully loosen the screw of it.



4. When removing the TBC-23A or TBC-24 board, disconnect the harness from its board.
   TBC-23A board : CN1 (E-1) ..... 14P White
   TBC-24 board : CN1 (E-1) ..... 14P White
5. Open the eject levers on both end of the board in the direction of the arrows.
6. Hold the eject levers and slowly pull the board out.



7. When removing the AU-260, EQ-75, or SDI-41 board, disconnect the harnesses or cables from the following connectors on its board.
   AU-260 board : CN100 (B-1) ..... 3P Red
   CN200 (F-1) ..... 3P Yellow
   EQ-75 board : CN100 (B-7) ..... 6P White
   CN500 (A-4) ..... 4P White
   CN600 (G-3) ..... 4P Red
   CN1500 (A-5) ..... 4P Black
   CN1600 (G-5) ..... 4P Yellow
   SDI-41 board : CN100 (A-1) ..... 1P (Red)
   CN101 (B-1) ..... 1P (Yellow)
   CN700 (F-1) ..... 1P (Orange)
   CN701 (E-1) ..... 1P (Green)
   CN800 (G-1) ..... 1P (Blue)

   When removing the DPR-118 board with BKNW-118 (DPR-119 board), disconnect the two cables from the following connectors on the DPR-119 board.
   DPR-119 board : CN1 ..... 1P (Orange)
   CN3 ..... 1P (Green)

   When removing the DPR-150 board of BKNW-124, disconnect the two cables from the following connectors on the DPR-150 board or the piggybacked DIF-109 board onto the DPR-150 board.
   DPR-150 board: CN200 ..... 1P (Orange)
   (DIF-109 board) CN201 ..... 1P (Green)

When reattaching the board, install in the reverse order of removal.

Notes

- After inserting the board, push in the two folded eject levers simultaneously to firmly connect the plug-in board to the connector on the motherboard (MB-818 board).
- To reattach the board retainer, tighten the screw after inserting the protrusion of the board retainer into the square hole of chassis.

2-14. Fixtures and Adjustment Equipment List

2-14-1. Fixtures

Note The tools that are used only in the maintenance manual part 2 are also described.

Fig. No.	Part No.	Description	[Inscription No.]	For use
①	J-6035-070-A	Extraction tool (for PLCC socket)	—	Extraction of IC (PLCC type)
②	J-6080-029-A	Small dental mirror (round type ø12)	—	Cassette pillar height adjustment, tape path adjustment
③	J-6086-570-A	Reference flat plate	[SL-657]	AT head zenith adjustment
④	J-6152-450-A	Wire clearance check gauge set	—	Clearance check
⑤	J-6251-090-A	Torque screwdriver's hexagonal bit (d=2.5 mm, l=120 mm)	—	Tightening screws to fix a drum assembly and upper drum asssembly
	J-6323-440-A	Torque screwdriver's hexagonal bit (d=0.89 mm, l=50 mm)	—	Tightening screws to fix a M gear
⑥	J-6323-420-A	Torque screwdriver's bit (+2 mm, l=75 mm)	—	Tightening screws to fix a brush/slip ring assembly
	J-6323-430-A	Torque screwdriver's bit (+3 mm, l=90 mm)	—	Tightening screws to fix a reel motor assembly or a ring roller
⑦	J-6252-510-A	Torque screwdriver (6 kg•cm)(0.6 N•m)	[JB-5251]	Tightening screws
	J-6252-520-A	Torque screwdriver (12 kg•cm)(1.2 N•m)	[JB-5252]	Tightening screws
⑧	J-6269-810-A	Extension board (S), EX-377	—	Extension of the small-sized plug-in board (DM, TBC)
⑨	A-8277-211-A	Extension board (L), EX-555	—	Extension of the large-sized plug-in board
⑩	A-8277-212-A	Extension board (S), EX-556	—	Extension of the small-sized plug-in board (EQ, AU, SDI, DEC)
⑪	J-6320-870-A	Reel motor shaft slantness check fixture	[MW-087]	Reel motor shaft slantness adjustment
⑫	J-6320-880-A	Cassette reference plate (L)	[MW-088]	Reel table height adjustment, Reel motor shaft slantness adjustment
⑬	J-6322-610-A	Tape guide adjustment driver	[MW-261]	Tape path alignment
⑭	J-6329-350-A	Reel table height gauge	[MW-935]	Reel table height adjustment
⑮	1-952-684-11	Extension cable (14P)	—	Extension of the TBC-23A or TBC-24 board
⑯	A-8321-333-A	Power cable assembly	—	Extension of the power supply unit
⑰	3-184-527-01	Cleaning cloth (15 cm × 15 cm)	—	Cleaning
⑱	7-432-114-11	Locking compound (200 g)	—	Inhibits loosening of screws
⑲	7-661-018-18	Diamond oil NT-68 (50 ml)	—	
⑳	7-651-000-10	Sony grease SGL-601 (50 g)	—	
㉑	7-700-736-01	L-shaped hexagonal wrench (d=1.27 mm)	—	
	7-700-736-04	L-shaped hexagonal wrench (d=2.5 mm)	—	
	7-700-736-05	L-shaped hexagonal wrench (d=1.5 mm)	—	
	7-700-736-06	L-shaped hexagonal wrench (d=0.89 mm)	—	
㉒	7-700-766-04	Hexagonal wrench driver (d=2.5 mm)	—	
㉓	8-960-075-01	Alignment tape, SR5-1	—	Video/audio alignments (for 525/60 system)
	8-960-075-11	Alignment tape, SR2-1	—	Servo alignments (for 525/60 system)
	8-960-075-51	Alignment tape, SR5-1P	—	Video/audio alignments (for 625/50 system)
	8-960-075-61	Alignment tape, SR2-1P	—	Servo alignments (for 625/50 system)
㉔	8-960-096-01	Alignment tape, CR2-1B	—	Tracking adjustment (for analog Betacam NTSC)
	8-960-096-41	Alignment tape, CR5-1B (metal particle tape)	—	Video alignments (for analog Betacam NTSC)
	8-960-096-51	Alignment tape, CR2-1B PS	—	Tracking adjustment (for analog Betacam PAL)
	8-960-097-44	Alignment tape, CR5-2A (oxide tape)	—	Video alignments (for analog Betacam NTSC)
	8-960-097-45	Alignment tape, CR8-1A (oxide tape)	—	Audio alignments (for analog Betacam NTSC)
	8-960-096-91	Alignment tape, CR5-1B PS (metal particle tape)	—	Video alignments (for analog Betacam PAL)
	8-960-096-86	Alignment tape, CR8-1B PS (metal particle tape)	—	Audio alignments (for analog Betacam PAL)
	8-960-098-44	Alignment tape, CR5-2A PS (oxide tape)	—	Video alignments (for analog Betacam PAL)
	8-960-098-45	Alignment tape, CR8-1A PS (oxide tape)	—	Audio alignments (for analog Betacam PAL)
㉕	9-911-053-00	Thickness gauge	—	Clearance check
㉖	9-919-573-01	Cleaning liquid	—	Cleaning
㉗	J-6332-240-A	VISC phase adjusting tool	—	VISC alignment for PAL system (for DNW-A75P only)
㉘	J-6530-650-A	Head tip protrusion measurement gauge	—	Head tip protrusion check of the video heads
㉙	J-6190-800-A	Tension regulator slantness check tool	[BW-080]	Slant guide slantness adjustment
㉚	A-8319-485-A	IC memory card box, CDS-20 assembly	—	Software update
㉛	1-772-003-11	IC memory card (2 MB), MB98A81183	—	Software update
	1-772-004-11	IC memory card (4 MB), MB98A81273	—	Software update

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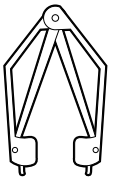

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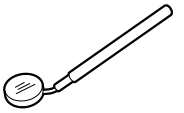

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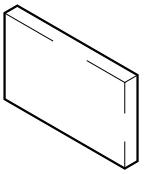

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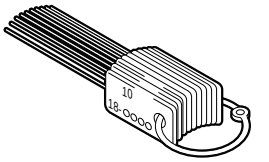

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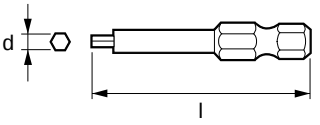

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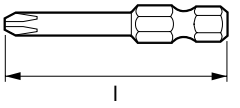

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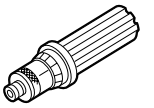

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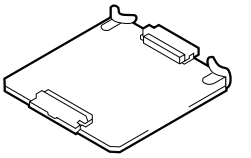

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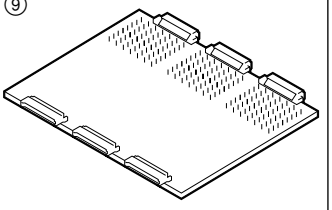

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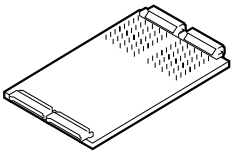

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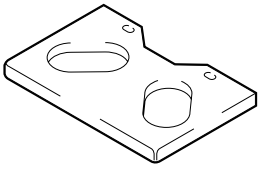

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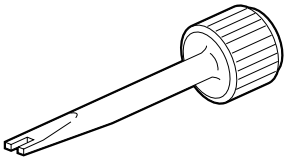

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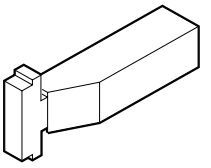

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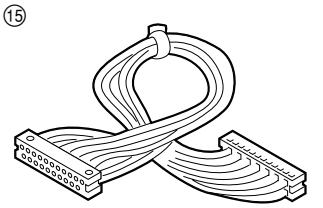

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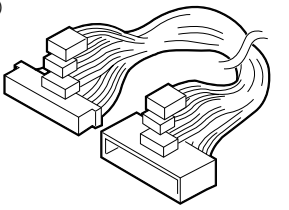

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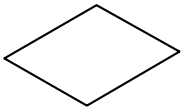

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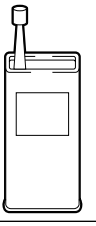

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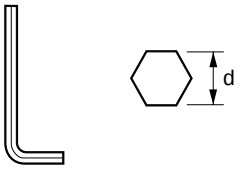

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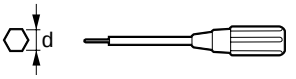

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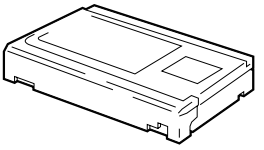

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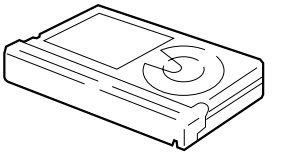

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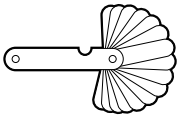

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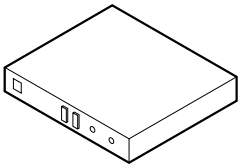

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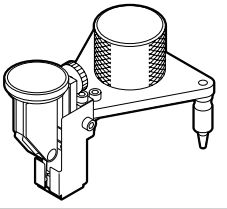

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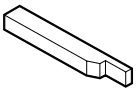

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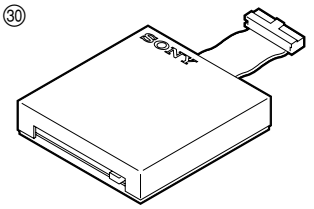

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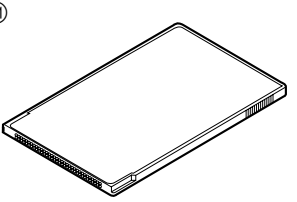

2-14-2. Equipment for Adjustment

It is recommended to use the equipment listed below or the equivalents.
Each equipment is available as a standard product.

Note

These equipment are used in the maintenance manual part 2.

Equipment	Model name	Remarks
Analog composite video signal generator (with GENLOCK mode)	Tektronix 1410	(For 525/60 system)
	Tektronix 1411	(For 625/50 system)
Analog composite video signal generator	Tektronix TSG-170A	(For 525/60 system)
	Tektronix TSG-271	(For 625/50 system)
Analog component video signal generator	Tektronix TSG-300	For generating SMPTE/EBU format analog video signal (For DNW-A75)
	Tektronix TSG-371	For generating SMPTE/EBU format analog video signal (For DNW-A75P)
Digital component video signal generator	Tektronix TSG-422 (OP.1S)	For generating 4:2:2 format digital signal
Spectrum analyzer	Advantest R3261A	With external trigger function Bandwidth: more than 100 MHz
Oscilloscope	Tektronix 2465B	
Analog component waveform monitor	Tektronix WFM300 or WFM300A	For measuring analog component video levels
Serial component waveform monitor	Tektronix WFM601	
Analog composite waveform/vector monitor	Tektronix 1750 or 1780R	For measuring analog composite SC-H (For 525/60 system)
	Tektronix 1751 or 1781R	For measuring analog composite SC-H (For 625/50 system)
Audio signal generator	Tektronix SG505 (OP.02)	
Audio analyzer	Tektronix AA501A (OP.02)	For measuring levels (dBm), distortion, and dB ratio
Audio level meter	Hewlett-Packard HP3400A	
Frequency counter	Advantest TR5821AK	
Digital voltmeter	Advantest TR6845	
Monitor with serial digital input	Sony BVM-1311 (with optional accessory BKM-2085-14)	(For DNW-A75)
	Sony BVM-1411 (with optional accessory BKM-2085-14)	(For DNW-A75P)
Network analyzer	Anritsu MS420B	
Time code generator	Sony BVG-1600	(For 525/60 system)
	Sony BVG-1600PS	(For 625/50 system)
Time code reader	Sony BVG-1500	(For 525/60 system)
	Sony BVG-1500PS	(For 625/50 system)
Terminator	—	75-ohm, BNC type
BNC T adapter	—	75-ohm
Recording tape	Sony BCT-SX series	Cassette tape for Betacam SX

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2-15. ISR

Overview

This unit corresponds to ISR (Interactive Status Reporting) function. When this unit is connected to the personal computer which activates Sony's ISR application software, the status of this unit or the contents of a generated error can be intensively monitored and managed on the monitor screen of a personal computer. The data displayed on the monitor screen can be stored as a file.

Note

As for ISR application software, method of using or installing the personal computer which can use this software, and the method of concrete operating, refer to ISR protocol manual.
For obtaining it, contact your local Sony Sales Office/Service Center.

The major functions are as follows:

Monitor functions

- Error code and error message (Refer to Section 3.)
- Display of operation status (Equivalent to the display on the video monitor.)

Management functions

- Model name, serial No., destination
- ROM version

Indicating item	Description
Manufacture	Displayed as SONY.
Model name	Displays the model name.
Serial No.	Displays the serial No.
Divece ID	Can give an arbitrary name to this unit and register it.
Destination	Displays the destination. J (For Japan), SYL (For Overseas)
ROM	Displays the information of the ROMs mounted in this unit.

Inspection functions

- Hours meter (Equal to hours meter of the setup menu)
- Error logger

2-16. Battery for Memory Backup

The unit is equipped with a battery for the memory (IC710) backup on the SS-83 board. When replacing, be sure to use the specified part.

Replacement part:	BT710/SS-83 board
Part description:	M4T28-BR12SH1 (lithium battery)
Part No.:	1-767-156-11
Recommended replacement period:	Every seven years

In the memory, the following data is stored. When the battery is dead, or replaced with a new one, resetting current menu, menu banks 1 to 4, and calender/clock is required. For details on how to reset the current menu and menu banks, refer to the operation manual supplied with the unit.
When the battery is dead or replaced, error logs are all cleared.

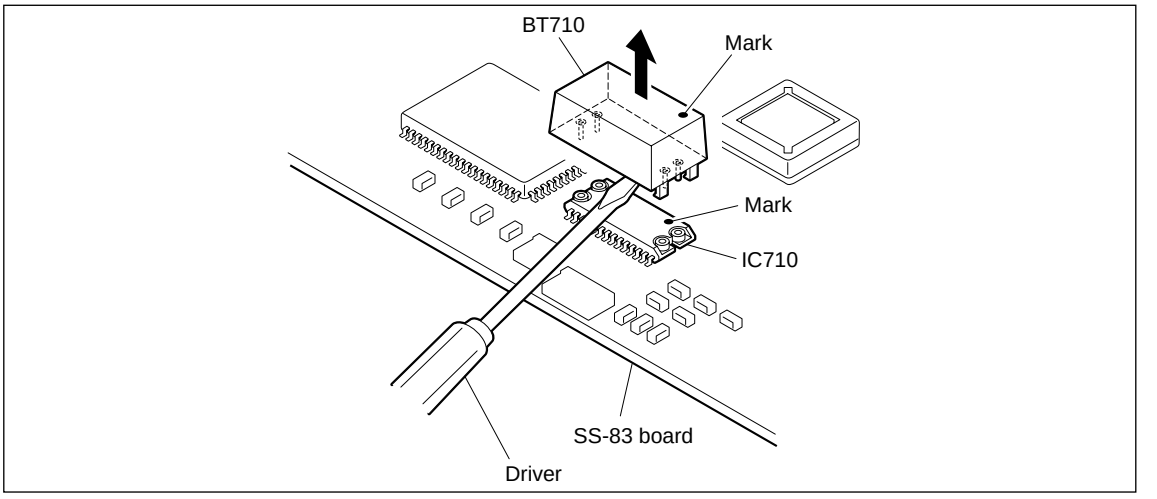
- Current menu
- Menu banks 1 to 4
- Calender/Clock
- ID-code data

Replacement

Note

When replacing the battery, ensure that a mark on the battery is correctly oriented as shown in the following figure.

1. Remove the SS-83 board. (Refer to Section 2-13.)
2. Insert a flat blade driver between BT710 and IC710 to remove the battery.
3. Carefully install a new battery, ensuring that the mark's on the BT710 and IC710 are aligned.
4. Reset the current menu and menu banks. (Refer to the operation manual.)
5. For the ID-code data-using unit:
   Set the ID-code data. (Refer to the operation manual, the setup menu ITEM-603.)
6. Reset the calender/clock. (Refer to Section "4-3-3. Setting Mode".)



2-17. Setup Menu (F-Series)

This section explains the F-series items on the setup menu, which are for use during adjustment or maintenance.
For details on other-series items, refer to the operation manual supplied with the unit.

2-17-1. Menu Operation

Preparation

The menus for F-series items are usually not accessible. To display them, internal switch setting for the SS-83 board is required. For details on the switch function, refer to Section 1-10.

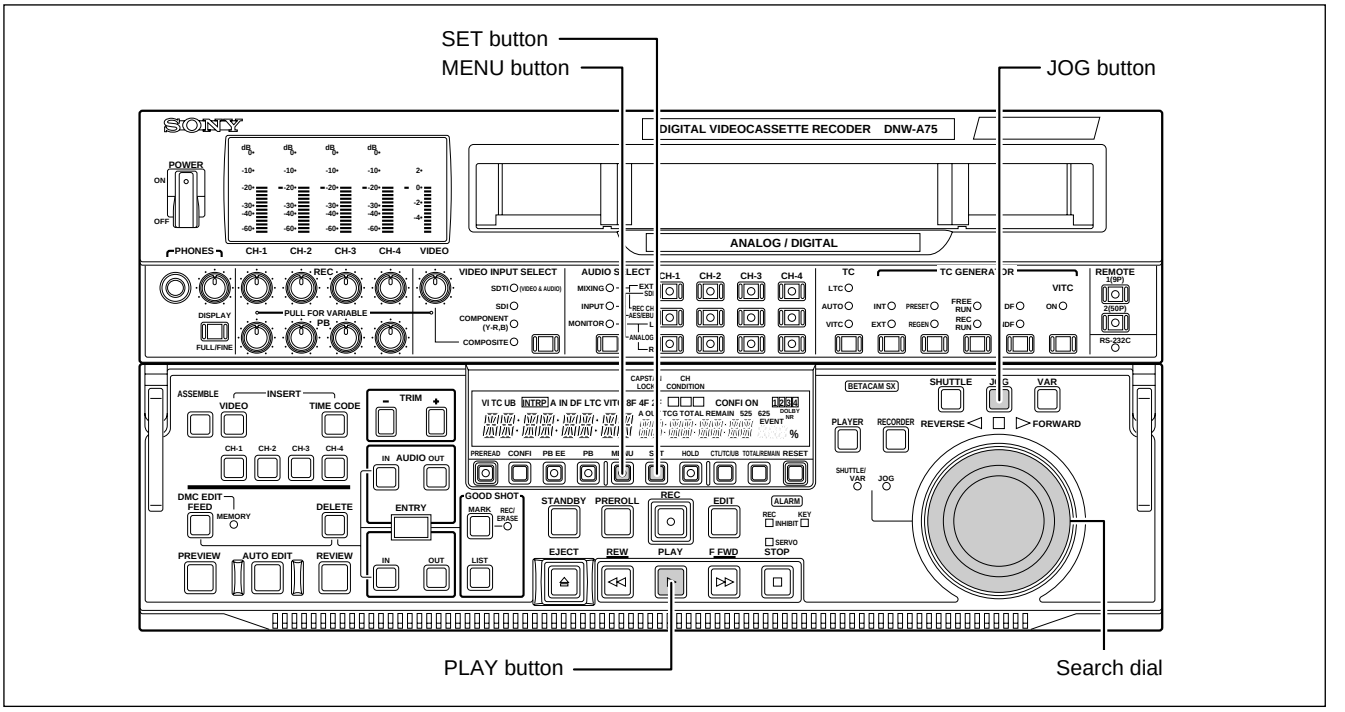
- S1100-1/SS-83 board ⇨ ON (Displays the extended menu of the setup menu)

Activating the menu

1. Press the MENU button.
2. Press the JOG button to enter the JOG mode.
3. Turn the seach dial while pressing the PLAY button.

Basic operation

- **To select ITEM**
  Turn the seach dial while pressing the PLAY button to display the desired ITEM in the time data display area.
- **To change DATA**
  Turn the seach dial while pressing the JOG button.
- **To enter the setting value**
  Press the SET button.



2-17-2. F-Series Items

The F-series items contain the following items.
In the “Settings” columm of the table, the factory default settings are indicated by an enclosing box.

No.	ITEM	Settings	Description
F01	AUDIO NR IN SP MODE	[ON] SW	Turns on and off the Dolby NR when using a metal tape. ON: Dolby NR is turned on usually SW: Dolby NR switch is turned on and off depending on the setting of the sub control panel **Notes** • This item is used exclusively for analog Betacam longitudinal audio playback adjustment for 625/50 system. After adjustment is completed, return to the factory setting “ON”. • When using an oxide tape, follows the sub control panel switch setting regardless of the above setting.
F02	EMERGENCY TAPE PROTECTION	[ENA] DIS	Selects whether emergency tape protection operation is enabled or not when VTR detects error in tape transport mechanism. ENA: Tape protection operation is enabled DIS: Tape protection operation is disabled **Note** This item is used exclusively for servo and mechanical adjustment. After adjustment is completed, return to the factory setting “ENA”.
F13	TRACKING CONTROL VIA SEARCH DIAL	[OFF] ON	Turns on and off the tracking control operation with search dial. OFF: Tracking control with the search dial is not activated ON: Tracking control becomes active when turning the search dial in PLAY mode **Note** This item is used exclusively for video tracking adjustment. After adjustment is completed, return to the factory setting “OFF”.
F16	DEVICE TYPE MODIFY:0H	[0] 1 | FFFF	Determines response data to 9-pin remote command DEVICE TYPE REQUEST (00h, 11h). 0: Returns the original device type data of the unit Except 0: Returns the set values as they are: The higher-order two digits are for DATA-1 The lower-order two digits are for DATA-2 **Note** Any selection of the above does not influence the whole VTR operation including TTP. If this item is set to values other than the factory setting “0”, the operation of the unit is not ensured under the 9-pin remote command control.
F21	PROCESS CONT VR LOCAL ENABLE	[ON]* OFF	Selects whether Process control (step menus, knobs, and switches) is enabled or not, when LOCAL DISABLE command is received through the 9-pin remote connector or the setup menu ITEM-006: LOCAL FUNCTION ENABLE is set to “DIS” (all disable). ON: Settings of above Process control are enabled OFF: Settings of above Process control are disabled **Note** *: When the SY1 ROM version is earlier than 1.33, the factory setting is “OFF”.
F25	SERVO/AV REF SEL IN PREREAD MODE	[OFF] ON	Selects the reference servo signal during pre-read operation. OFF: The setting of ITEM-309 is enabled. ON: The reference servo signal is set to forced EXT. (An external reference video input signal is used in this case.)

(Continued)

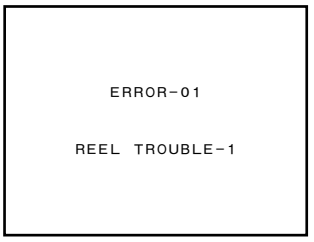
(Continued)

No.	ITEM	Settings	Description
F34	STOP PINCH OFF TIME	0 M [5 M] 10 M 15 M 20 M	Specifies the time at which the pinch ON condition is kept even if the PB operation is completed in the SX tape PB mode. The time is usually set to “5 M”. When “0 M” is set, the pinch is turned off as soon as the PB operation is completed. **Note** When the pinch is turned off, it takes a few seconds to output image and sound signals during PB operation of the next time.
F35	AUDIO DITHER	[ON] OFF	Specifies how to process the data when audio input data is recorded. ON: Processes the audio input data to be recorded by a dither method. The result is rounded and recorded in 16 bits. OFF: The audio input data of less than 17 bits is rounded down and recorded. **Note** Set “OFF” to record a signal accurately according to the input data (i.e., record a DOLBY AC-3 encoded signal).

Section 3
Error Message

3-1. Overview of Error Message

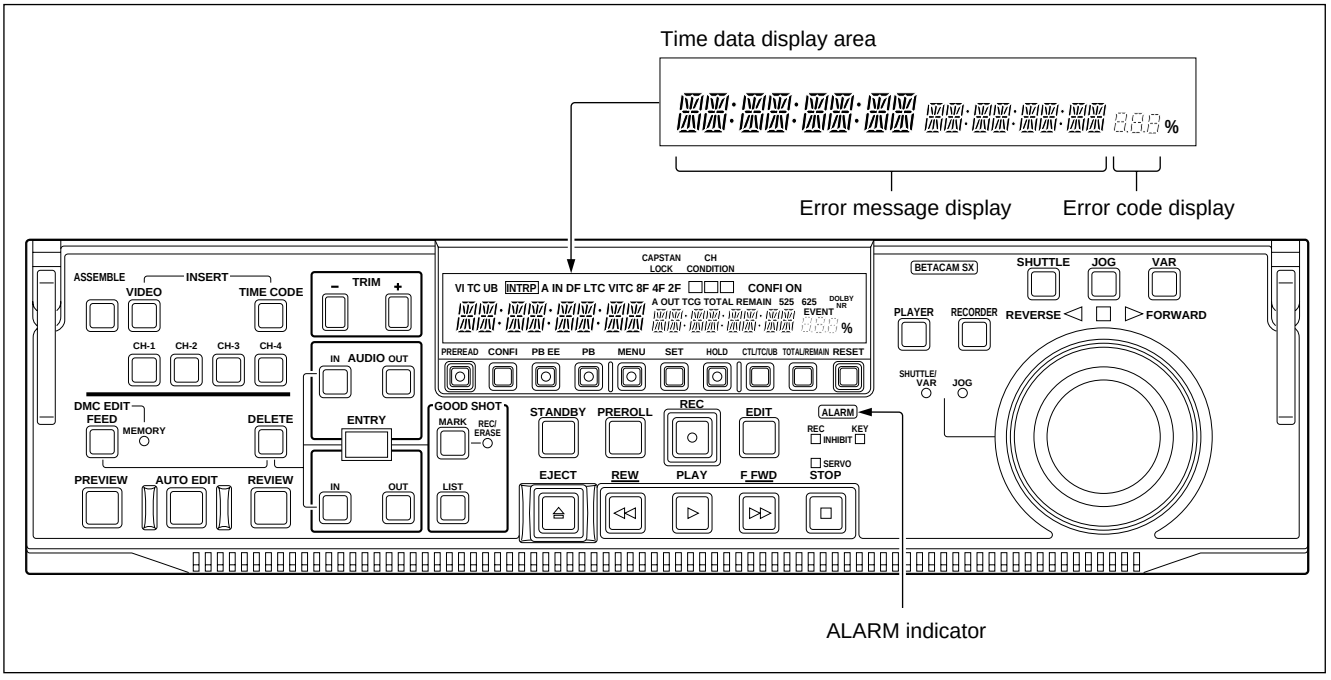
This unit has self-diagnostics function.
When trouble is detected, an ALARM indicator is lighted immediately on the lower control panel, and an error message and error code are displayed in the time data display area and event display area.
Also, an error code and error message are superimposed on the video monitor connected to the VIDEO OUTPUT COMPOSITE 3 (SUPER) connector. Furthermore, as for the some error codes, object which error occurred is displayed as sub error message on the video monitor.



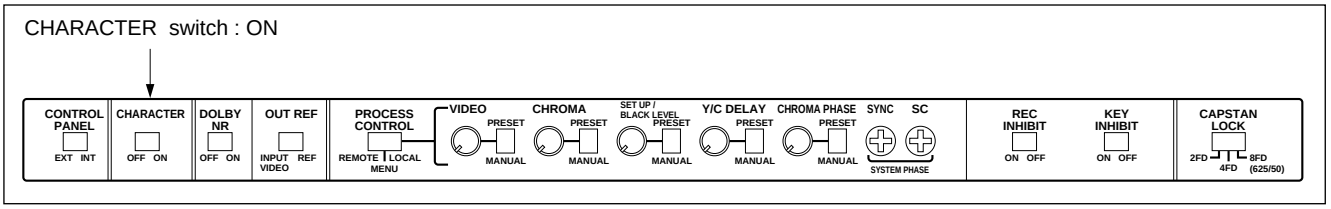
Ex. Superimposed on Video Monitor

Notes

- To superimpose the error message and code on the video monitor, the CHARACTER switch on the sub control panel must be set to ON.
- There are the error messages without error code. These messages are only displayed on the time data display area.
- The error messages with error code are memorized to NV-RAM (Non-volatile RAM) as the error logging data.
  (Refer to Section 4-3 for the error logging data.)
- The messages on the time data display area differ from the messages which are superimposed on the video monitor in some items.



Error Message/Code Display Area and ALARM Indicator



CHARACTER Switch on Sub Control Panel

Error messages are described on Section 3-2 in the order of list.

Error List

Code	Message on time data display area	Page	Description
–	NO COMMUNICATION	3-4	Abnormality in the interface between the lower control panel (KY-438 board) and SYS1 CPU (SS-83 board) is detected in the lower control panel side.
01	REEL TROUBLE	3-4	Tape slacking is detected in the threading or unthreading operation.
02	REEL TROUBLE	3-5	Tape slacking or tape breaking is detected in the SEARCH, FF, or REW mode.
03	REEL TROUBLE	3-6	Tape slacking, tape breaking, or supply or take-up reel locking is detected in the REC or PLAY mode.
04	REEL TROUBLE	3-7	A malfunctional tape transport speed is detected in the FF or REW mode.
05	REEL TROUBLE	3-7	The malfunctional operation of the supply or take-up reel is detected during cassette insertion.
06	TAPE TENSION	3-8	Excessive tape tension is detected in the REC or PLAY mode.
07	CAPSTAN TROUBLE	3-8	Malfunction of capstan motor is detected.
08	DRUM TROUBLE	3-9	Malfunction of drum motor is detected.
09	TH/UNTH MOTOR	3-9	Malfunction of threading or unthreading operation is detected.
0A	THREADING	3-10	It is detected that the tape top processing is not completed in the threading mode.
10	HUMID	3-10	Dew condensation is detected.
11	TAPE T/E SENSOR	3-11	The tape top and tape end are detected simultaneously.
12	TAPE TOP SENSOR	3-11	Malfunction of tape top sensor is detected.
13	TAPE END SENSOR	3-12	Malfunction of tape end sensor is detected.
14	FAN MOTOR	3-13	Malfunction of cooling fan motor is detected.
20	CASS COMP MOTOR	3-14	Malfunction of cassette compartment-up or down operation is detected.
21	REEL SFT MOTOR	3-14	Malfunction of movement of the reel table corresponding to the cassette size is detected.
22	REEL POS SENSOR	3-15	The L-cassette and S-cassette positions of the reel table are detected simultaneously.
23	THRED RING SENS	3-15	The thread end and unthread end states of the threading ring are detected simultaneously.
92	INTERNAL I/F 1	3-16	Abnormality in the interface between SYS1 CPU (on SS-83 board) and other CPU/MPU is detected.
93	CPU INITIALIZE ERROR	3-17	Abnormality in the interface between SV CPU (on SS-83 board) and DT MPU (on SS-83 board) or DRUM MPU (on SS-83 board) is detected.
95	OTHERS NV-RAM ERROR	3-17	Abnormality operation of an NV-RAM on RM-179/190 board is detected.
96	SY NV-RAM ERROR	3-18	The abnormal operation of an NV-RAM (on SS-83 board) for the system control system is detected.
97	SV NV-RAM	3-19	The abnormal operation of an NV-RAM (on MS-58 board) for the servo system is detected.
98	RF NV-RAM ERROR	3-19	The abnormal operation of an NV-RAM (on EQ-75, DM-89, or TBC-23A board) for the RF system is detected.
99	INTERNAL I/F 2	3-20	Abnormality in the interface between SYS2 CPU (on SS-83 board) and SERVO CPU (on SS-83 board) or MPU (on EQ-75, DM-89, TBC-23A, or SDI-41 board) or FL (level meter module) is detected.

Notes

- Error codes 01 through 14 are detected in both/one of the SS-83 and/or MS-58 boards.
  Error codes 20 through 23 are detected in the MS-58 board.
  Error codes 92 through 99 are detected in the SS-83 board.
- There are two error groups of error codes: VTR and OTHERS. If errors occur in multiple error groups, the error message of each group are switched at two-second intervals.
  Also, if multiple errors occur in error group, the priority level of each group display are as follows:
  VTR: 97, 02, 03, 04, 05, 07, 06, 01, 09, 08, 0A, 10, 11, 12, 13, 14, 20, 21, 22, 23
  OTHERS: 92, 96, 98, 99, 93, 95

3-2. Details of Error Messages

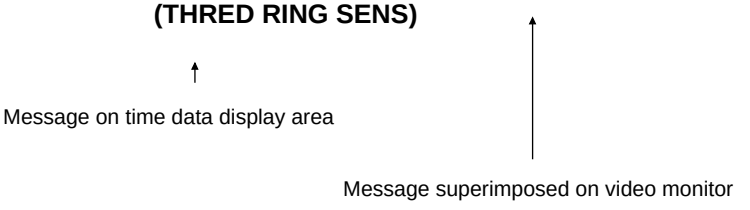
CAUTION

The “protection mode” described in this section means the servo control system automatically stops the tape transport and drum motor rotation, and maintains this state. The DNW cannot be automatically recovered to the normal state when the DNW once enters the protection mode. Be sure to turn on the power again under the absence of the cassette tape.
If the protection mode is entered with the cassette tape inserted, take out the cassette tape manually with reference to “2-12. Taking Out the Cassette in Tape Slacking”. Never turn on the power again without taking out the cassette tape. This may damage the tape.

Note

The messages on the time data display area differ from the messages which are superimposed on the video monitor in some items. In this section, each message indicates as following example.

Ex. : ERROR-23 THREADING RING POSITION ERROR
(THRED RING SENS)



(NO COMMUNICATION)

Description: Abnormality in the interface between the lower control panel's MPU (KY-438 board) and SYS1 CPU (SS-83 board) was detected.

Note

This error message is only displayed on the time data display area in that the abnormality of the interface is detected in the lower control panel side.

Detecting condition: When the lower control panel's MPU (IC104 on KY-438 board) is received no interface signal from SYS1 CPU (IC704 on SS-83 board) for more than two seconds.

Possible causes:
- Cable connection defect or disconnection
- Line receiver/transceiver (IC102 on KY-438 board) trouble
- SIO (IC1102 on SS-83 board) trouble

Protecting operation: None

ERROR-01 REEL TROUBLE - 1 (REEL TROUBLE)

Description: Tape slacking was detected during threading or unthreading.

Detecting conditions:
1) When no take-up reel FG can be detected in the unthread operation just after activation.
2) When the relation between the take-up reel FG and threading FG is out of the specification in operations other than unthread just after activation.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of take-up reel FG detection block
- Take-up reel FG waveform shaper circuit (MS-58 board) trouble
- Take-up reel motor trouble
- Take-up reel motor drive circuit (DR-315 board) trouble
- Take-up reel brake trouble
- Take-up reel brake solenoid drive circuit (MS-58 board) trouble
- Servo adjustment defect on take-up reel
- Harness disconnection
- Take-up reel table height adjustment defect

Protecting operation: Enters the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to Section 2-12). Do not turn on the power again without taking out the cassette. This may damage the tape.

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ERROR-02 REEL TROUBLE - 2 (REEL TROUBLE)

Description: Tape slacking or tape breaking was detected in SEARCH, FF, or REW mode.

Detecting conditions:
1) When the take-up value is lower than the specified value with respect to the tape supply value.
2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification.
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ∗ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel FG waveform shaper circuit (MS-58 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan FG waveform shaper circuit (MS-58 board) trouble
- Take-up torque insufficiency during REW due to supply tension sensor or supply tension detector circuit (MS-58 board) trouble
- Servo adjustment defect on capstan, reel(s), and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-58 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Enters the protection mode. The normal state may be returned after the protection mode is entered at the end of the tape.

CAUTION

Be sure to take out the cassette manually (refer to Section 2-12). Do not turn on the power again without taking out the cassette. This may damage the tape.

ERROR-03 REEL TROUBLE - 3 (REEL TROUBLE)

Description: Tape slacking, tape breaking, or supply or take-up reel locking was detected in the REC or PLAY mode.

Detecting conditions:
1) When the take-up value is lower than the specified value with respect to the tape supply value.
2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification.
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds.
4) When the tension value calculated from the supply tension sensor output is less than 15 g continuously for more than three seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel FG waveform shaper circuit (MS-58 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan FG waveform shaper circuit (MS-58 board) trouble
- Servo adjustment defect on capstan, reel(s), and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-58 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Enters the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to Section 2-12). Do not turn on the power again without taking out the cassette. This may damage the tape.

ERROR-04 REEL TROUBLE - 4 (REEL TROUBLE)

Description: Abnormal tape transport speed was detected in the FF or REW mode.

Detecting condition: When the tape speed calculated from the supply reel FG and take-up reel FG is under a half of the specified tape speed continuously for more than four seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ∗ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel motor trouble
- Supply or take-up reel FG waveform shaper circuit (MS-58 board) trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Servo adjustment defect on supply or take-up reel
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-58 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Stops the tape transport and enters the rest state.

ERROR-05 REEL TROUBLE - 5 (REEL TROUBLE)

Description: Abnormal supply reel or take-up reel operation was detected in a diagnosis during cassette insertion.

Detecting conditions:
1) When the supply reel FG or take-up reel FG count is less than the specified value with the reel rotated.
2) When the supply reel FG or take-up reel FG count is more than the specified value with the reel stopped.

Sub error message: None

Possible causes:
- Supply or take-up reel FG sensor (SE-461 board) trouble or clearance adjustment defect
- Supply or take-up reel FG waveform shaper circuit (MS-58 board) trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Servo adjustment defect on supply or take-up reel
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-58 board) trouble
- Harness disconnection

Protecting operation: Ejects the cassette.

ERROR-06 TAPE TENSION ERROR (TAPE TENSION)

Description: Excessive tension was detected in the REC or PLAY mode.

Detecting condition: When the tension value calculated from supply tension sensor output is more than 55 g continuously for more than three seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- Supply tension sensor or its related circuit (MS-58 board) trouble
- Supply reel motor trouble
- Supply reel motor drive circuit (DR-315 board) trouble
- Servo adjustment defect on supply reel and supply tension sensor
- Supply reel brake trouble
- Supply reel brake solenoid drive circuit (MS-58 board) trouble
- Harness disconnection

Protecting operation: Stops the tape transport and enters the rest state.

ERROR-07 CAPSTAN TROUBLE (CAPSTAN TROUBLE)

Description: Malfunction of capstan motor was detected.

Detecting conditions:
1) When the capstan FG count is less than the specified value in a diagnosis during cassette insertion.
2) When the frequency calculated from the capstan FG is out of the specification in the REC, PLAY, or SEARCH mode.
3) When CAPSTAN FG(A) NOR signal and CAPSTAN FG(B) NOR signal interruption are not normal for about 40 ms in the REC or PLAY mode.

Sub error message: None

Possible causes:
- Capstan motor trouble
- FG sensor trouble in capstan motor
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan motor FG waveform shaper circuit (MS-58 board) trouble
- Capstan FG duty adjustment defect

Protecting operations: Ejects the cassette for No. 1 in detecting conditions.
Stops the tape transport and enters the rest state for No. 2 and No. 3 in detecting conditions.

ERROR-08 DRUM TROUBLE (DRUM TROUBLE)

Description: Malfunction of drum motor was detected.

Detecting condition: When the drum FG cycle is shifted more than about ±30 % continuously for more than 10 seconds as compared with during normal rotation.

Sub error message: None

Possible causes:
- Drum motor trouble
- DRUM MPU (IC314 on SS-83 board) trouble
- Drum motor drive circuit (DR-315 board) trouble
- Drum FG/PG waveform shaper circuit (DR-315 board) trouble
- Assembly defect during upper drum replacement

Protecting operation: Stops the tape transport and enters the rest state in the unthread end state.

ERROR-09 TH/UNTH MOTOR TIME OUT (TH/UNTH MOTOR)

Description: Malfunction of threading or unthreading operation was detected.

Detecting conditions:
1) When no operation is completed within about six seconds after operation start.
2) When no threading FG is output within about 0.4 second during threading motor drive.
3) When states other than unthread end are continued for more than six seconds in case that the unit should be in the unthread end state.

Sub error message: None

Possible causes:
- Unthread end sensor (TR-79 board) trouble
- Thread end sensor (TR-79 board) trouble
- Thread end/unthread end input port (IC1 on MS-58 board) trouble
- Threading motor trouble
- Threading FG sensor (PTC-54 board) trouble
- Threading FG waveform shaper circuit (MS-58 board) trouble
- Threading motor drive circuit (DR-315 board) trouble
- Threading mechanism trouble

Protecting operations: Ejects the cassette during cassette insertion or ejection.
Enters the protection mode during tape threading/unthreading.
Stops the tape transport and enters the rest state in cases except the above.

ERROR-0A THREADING TROUBLE (THREADING)

Description: It was detected that the tape top processing in the thread state is not completed.

Detecting condition: When the tape top is detected again after it is processed.

Tape top processing

In this processing, the tape is slightly forwarded without taking out the tape after unthread because the tape top was detected during threading.
(Short FF)

Sub error message: None

Possible causes:
- Take-up reel motor trouble
- Servo adjustment defect on take-up reel
- Take-up reel motor drive circuit (DR-315 board) trouble
- Tape top sensor trouble
- Tape top detection circuit (MS-58 board) trouble
- Tape top input port (IC115 on SS-83 board) trouble
- Tape abnormality

Protecting operation: Enters the rest state in the unthread end state.

ERROR-10 HUMID (HUMID)

Description: Dew condensation was detected.

Detecting condition: When the condensation sensor detects dew condensation continuously for about two seconds.

Sub error message: None

Possible causes:
- Actual dew detection (When the operating environment rapidly changes from low temperature to high temperature and high humidity)
- Condensation sensor trouble
- Dew input port (IC1 on MS-58 board) trouble

Protecting operations: Prohibits the cleaning roller operation.
Stops the tape transport and enters the rest state in the unthread end state when the tape is threaded in states other than PLAY and REC mode.
Prohibits the tape threading.
Prohibits the cassette insertion.

ERROR-11 TAPE TOP/END SENSOR TROUBLE (TAPE T/E SENSOR)

Description: The tape top and tape end were detected simultaneously.

Detecting condition: When the simultaneous detection of the tape end and tape top is continued for more than seven seconds.

Sub error message: None

Possible causes:
- Tape top sensor or tape end sensor trouble
- Tape top or tape end detection circuit (MS-58 board) trouble
- Tape top/tape end input port (IC115 on SS-83 board) trouble
- Harness disconnection

Protecting operation: Stops the tape transport and enters the rest state during tape transport.

ERROR-12 TAPE TOP SENSOR TROUBLE (TAPE TOP SENSOR)

Description: Malfunction of tape top sensor was detected.

Detecting condition: When the tape top is detected continuously for more than seven seconds.

Sub error message: None

Possible causes:
- Tape top sensor trouble
- Tape top detection circuit (MS-58 board) trouble
- Tape top input port (IC115 on SS-83 board) trouble
- Harness disconnection
- The tape cannot move at the tape top due to troubles other than the tape sensor.

Protecting operations: In the FF mode, continues the operation until the tape end is detected. Stops the tape transport and enters the rest state when the tape end is detected.
During tape transport in forward direction, the FF mode can be entered only while the total tape quantity is observed.
Stops the tape transport and enters the rest state during tape transport except the above.

ERROR-13 TAPE END SENSOR TROUBLE (TAPE END SENSOR)

Description: Malfunction of tape end sensor was detected.

Detecting condition: When the tape end is detected continuously for more than seven seconds.

Sub error message: None

Possible causes:
- Tape end sensor trouble
- Tape end detection circuit (MS-58 board) trouble
- Tape end input port (IC115 on SS-83 board) trouble
- Harness disconnection
- The tape cannot move at the tape end due to troubles other than the tape sensor.

Protecting operations: In the REW mode, continues the operation until the tape top is detected. Stops the tape transport and enters the rest state when the tape top is detected.
During the tape transport in reverse direction, the REW mode can be entered only while the total tape quantity is observed.
Stops the tape transport and enters the rest state during tape transport except the above.

ERROR-14 FAN MOTOR TROUBLE (FAN MOTOR)

Description: Malfunction of cooling fan motor was detected.

CAUTION

If this error occurred, stop immediately operation of the unit, and turn off the power.
If the unit uses continuously under the fan is stopped state, overhearting inside the unit can cause a fire or a failure.

Detecting condition: When the fan motor FG frequency is less than the specified value continuously for more than one second.

Sub error message: None

Possible causes:
- Fan motor trouble
- Fan motor FG input port (IC115 or IC500 on SS-83 board) trouble
- Fan motor control port (IC500 on SS-83 board) trouble
- Fan motor power switch circuit (MB-818 board) trouble

Protecting operation: None

Note

This unit has three fan motors.
When the above detecting condition is satisfied by any fan motor, this error occurs.
Relations of fan motors and operation state, ports, power switch circuit are as follows.

Use	Operation state	FG input port	Control port	Power switch circuit
For rear	Always rotating	IC500/SS-83 board	None	None
For mechanical deck	Always rotating	IC115/SS-83 board	IC500/SS-83 board	Q1 and Q2/MB-818 board
For power supply unit	Always rotating	IC115/SS-83 board	None	None

ERROR-20 CASSETTE COMPARTMENT MOTOR LOCK (CASS COMP MOTOR)

Description: Malfunction of cassette compartment-up or down operation was detected.

Detecting condition: When no operation is completed within about six seconds after operation start.

Sub error message: None

Possible causes:
- Cassette compartment block trouble
- Cassette compartment motor drive circuit (DR-315 board) trouble
- Cassette-down sensor (CL-29 board) trouble
- Cassette-down input port (IC1 on MS-58 board) trouble

Protecting operation: Stops the movement of the cassette compartment and reel table until a cassette eject button is pushed.

ERROR-21 REEL SHIFT MOTOR LOCK (REEL SFT MOTOR)

Description: Malfunction of movement of the reel table corresponding to the cassette size was detected.

Detecting condition: When no operation is completed within about six seconds after operation start.

Sub error message: None

Possible causes:
- Reel shift mechanism trouble
- Reel shift motor trouble
- Reel shift motor drive circuit (DR-315 board) trouble
- Reel position sensor (PTC-71 board) trouble (S position sensor or L position sensor)
- Reel position input port (IC1 on MS-58 board) trouble

Protecting operation: Stops the movement of the reel table and ejects the cassette during cassette loading.

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ERROR-22 REEL POSITION SENSOR TROUBLE (REEL POS SENSOR)

Description: The L and S cassette positions of the reel table were detected simultaneously.

Detecting condition: When the L and S position sensors detect the L and S cassette positions, respectively at the same time.

Sub error message: None

Possible causes:
- S position sensor (PTC-71 board) trouble
- L position sensor (PTC-71 board) trouble
- Reel position input port (IC1 on MS-58 board) trouble

Protecting operation: If possible, ejects the cassette, when an error occurs during cassette insertion.
Prohibits the cassette insertion.

ERROR-23 THREADING RING POSITION ERROR (THRED RING SENS)

Description: The thread end and unthread end states were detected simultaneously.

Detecting condition: When the thread end and unthread end sensors detect the thread end and unthread end states, respectively at the same time.

Sub error message: None

Possible causes:
- Thread end sensor (TR-79 board) trouble
- Unthread end sensor (TR-79 board) trouble
- Thread end or unthread end input port (IC1 on MS-58 board) trouble

Protecting operations: Ejects the cassette during cassette insertion or ejection.
Enters the protection mode during tape threading/unthreading.
Stops the tape transport and enters the rest state in cases except the above.

ERROR-92 INTERNAL INTERFACE ERROR 1 (INTERNAL I/F 1)

Description: Abnormality was detected in the communication between SYS1 CPU (IC704 on SS-83 board) and other CPU/MPU.

Sub error messages and Detecting conditions:

SY2: When the SYS2 CPU (IC1505 on SS-83 board) initialization at power-on is in abnormal state.

KY: When the communication with KY-438 board's MPU (IC104) is in abnormal state.

FP: When the communication with FP-117 board's MPU (IC6) is in abnormal state.

50PIN: When the communication with RM-130/190 board is in abnormal state.

RM NVRAM: When the communication with RM-179/190 board is in abnormal state.

Possible causes:

SY2:
- DIP switch (S1900 on SS-83 board) setting defect
- Common RAM (IC2500 on SS-83 board) trouble
- System control system SY-2 area (IC1500 series on SS-83 board) trouble

KY:
- Cable (between MB-818 board and KY-438 board) connection defect or disconnection
- Interface circuit (IC1102 through 1105 on SS-83 board) trouble
- Line receiver/transceiver (IC102 on KY-438 board) trouble
- KY-438 board's MPU (IC104) trouble

FP:
- Cable (between MB-818 board and FP-117 board) connection defect or disconnection
- MPU control interface circuit (IC1400 through 1402 on SS-83 board) trouble
- FP-117 board's MPU (IC6) trouble

50PIN:
- MPU control interface circuit (IC1400 through 1402 on SS-83 board) trouble
- RM-130 board's MPU (IC2) trouble
  or
  RM-190 board's MPU (IC1) trouble

RM NVRAM:
- MPU control interface circuit (IC1400 through 1402 on SS-83 board) trouble
- RM-179 board's NV-RAM (IC1) or IC2 trouble
  or
  RM-190 board's NV-RAM (IC11) trouble

Protecting operations: When the sub error message is "**SY2**", enters the protection mode.
When it is except above, displays only this error.

ERROR-93 CPU INITIALIZE ERROR (CPU INITIALIZE ERROR)

Description: Abnormality was detected in the communication between SV CPU (SS-83 board) and DT MPU or DRUM MPU (SS-83 board).

Sub error messages and Detecting conditions:

DT: When the communication with DT MPU (IC2700 on SS-83 board) at power-on is in abnormal state.

DRUM: When the communication with DRUM MPU (IC314 on SS-83 board) at power-on is in abnormal state.

Possible causes:

DT: IC2700 and its peripheral circuit on SS-83 board trouble

DRUM: IC314 and its peripheral circuit on SS-83 board trouble

Protecting operation: Prohibits the cassette insertion.

ERROR-95 OTHERS NV-RAM ERROR (OTHERS NV-RAM ERROR)

Description: The abnormal operation of an NV-RAM on RM-179 or RM-190 board was detected.

Sub error message and Detecting condition:

REMOTE-2 DATA RESET: When the REMOTE-2 (50-pin) setting data in an NV-RAM on RM-179/190 board is abnormal and the setting data is reset.

Possible cause: IC1 or IC2 on RM-179 board trouble
or
IC11 on RM-190 board trouble

Protecting operation: Resets the 50-pin parallel remote (REMOTE-2) setting data to the factory setting.

ERROR-96 SY NV-RAM ERROR (SY NV-RAM ERROR)

Description: The abnormal operation of an NV-RAM (IC710 on SS-83 board) for the system control system was detected.

Sub error messages and Detecting conditions:

CURRENT SETUP: When the data error occurs in the setup menu current memory area during the data write or read .

SETUP BANK1: When the data error occurs in the setup menu bank 1 memory area during the data write or read.

SETUP BANK2: When the data error occurs in the setup menu bank 2 memory area during the data write or read.

SETUP BANK3: When the data error occurs in the setup menu bank 3 memory area during the data write or read.

SETUP BANK4: When the data error occurs in the setup menu bank 4 memory area during the data write or read.

ID CODE: When the data error occurs in the ID code memory area during the data write or read.

CALENDAR CLOCK: When the calendar/clock function was stopped.

Possible causes:

- NV-RAM (IC710 on SS-83 board) trouble
- Address decoder (IC1107 on SS-83 board) trouble
- Backup battery inside NV-RAM is out of life

Protecting operations: When the error occurs in setting data of the setup menu, resets those data to the factory settings.
When the error occurs in ID data, resets the data to 00 00 00 00.
When the error occurs at the calendar/clock function, resets the date and time data to ’96 11 01 00 00 00 (= Year, Month, Day, Hour, Minute, Second).

ERROR-97 SV NV-RAM ERROR (SV NV-RAM)

Description: The abnormal operation of an NV-RAM (MS-58 board) for the servo system was detected.

Detecting condition: When the checksum of NV-RAM data does not coincide during activation.

Sub error message: None

Possible cause: NV-RAM (IC9 on MS-58 board) trouble

Protecting operation: Enters the protection mode.

ERROR-98 RF NV-RAM ERROR (RF NV-RAM ERROR)

Description: The abnormal operation of an NV-RAM (EQ-75, DM-89, or TBC-23A board) for RF system was detected.

Sub error messages and Detecting conditions:

EQ: When the error occurs in an NV-RAM (IC900 on EQ-75 board) during the data write or read.

DM: When the error occurs in an NV-RAM (IC908 on DM-89 board) during the data write or read.

TBC: When the error occurs in an NV-RAM (IC200 on TBC-23A board) during the data write or read.

Possible causes: Trouble of an NV-RAM indicated by sub error message

Protecting operation: None

ERROR-99 INTERNAL INTERFACE ERROR 2 (INTERNAL I/F 2)

Description: Abnormality was detected in the communication between SYS2 CPU (SS-83 board) and SERVO CPU (SS-83 board) or MPU (on EQ-75, DM-89, TBC-23A, or SDI-41 board) or FL (level meter module).

Sub error messages and Detecting conditions:

SV: When the SERVO CPU (IC103 on SS-83 board) initialization at power-on is in abnormal state.

EQ: When the communication with EQ-75 board's MPU (IC908) is in abnormal state.

DM: When the communication with DM-89 board's MPU (IC906) is in abnormal state.

TBC: When the communication with TBC-23A board's MPU (IC202) is in abnormal state.

SDI: When the communication with SDI-41 board's MPU (IC455) is in abnormal state.

FL: When the communication with FL (level meter module) is in abnormal state.

Possible causes:

SV:
- DIP switch (S101 on SS-83 board) setting defect
- Common RAM (IC2503 on SS-83 board) trouble
- Servo system (IC100 series or IC300 series on SS-83 board) trouble

EQ:
- MPU control interface circuit (IC2102, 2107, 2108 on SS-83 board) trouble
- Interface buffers (IC901, 902, 905 on EQ-75 board) trouble
- EQ-75 board's MPU (IC908) trouble

DM:
- MPU control interface circuit (IC2102, 2107, 2108 on SS-83 board) trouble
- DM-89 board's MPU (IC906) trouble

TBC:
- MPU control interface circuit (IC2102, 2107, 2108 on SS-83 board) trouble
- TBC-23A board's MPU (IC202) trouble

SDI:
- MPU control interface circuit (IC2102, 2107, 2108 on SS-83 board) trouble
- SDI-41 board's MPU (IC455) trouble

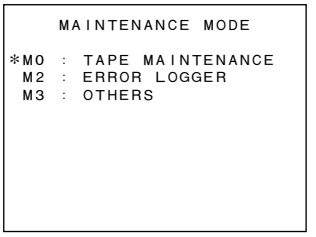
FL:
- Cable (between FP-117 board and level meter module) connection defect or disconnection
- Level meter module trouble

Protecting operations: When the sub error message is "**SV**", enters the protection mode.
When it is except above, displays only this error.

Section 4
Maintenance Mode

4-1. Overview of Maintenance Mode

This unit has the maintenance mode that is useful during maintenance and trouble diagnosis.
This maintenance mode consists of the three modes below. The contents of the maintenance mode are superimposed on the video monitor connected to the VIDEO OUTPUT COMPOSITE 3 (SUPER) connector.
(To superimpose the contents of the maintenance mode, set the CHARACTER switch on the sub control panel to ON.)

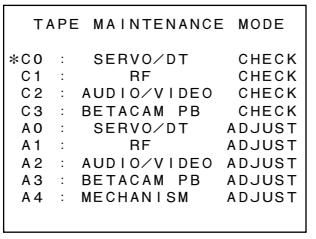


Note
The typeface of characters displayed on the video monitor differs from the actual one.

(Mode screen during activation of maintenance mode)

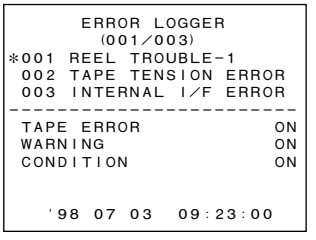
M0 : TAPE MAINTENANCE ..... (Section 4-2)

This mode is used for maintenance of a VTR part.


TAPE MAINTENANCE MODE
*C0 : SERVO/DT CHECK
C1 : RF CHECK
C2 : AUDIO/VIDEO CHECK
C3 : BETACAM PB CHECK
A0 : SERVO/DT ADJUST
A1 : RF ADJUST
A2 : AUDIO/VIDEO ADJUST
A3 : BETACAM PB ADJUST
A4 : MECHANISM ADJUST

M2 : ERROR LOGGER ..... (Section 4-3)

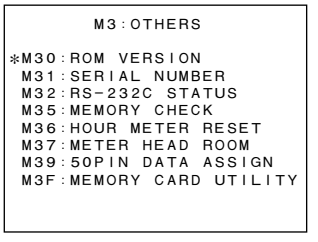
This mode is used to display the record of errors (error logging) that occur in this unit.



Note
The display on the left is one of the displayed examples.

M3 : OTHERS ..... (Section 4-4)

This mode is used for checking the others.



Buttons and Switches for Operation

The main buttons and switches related to the operation of maintenance mode are as follows: The ordinary functions of these buttons and switches and how to use them are described below.

① Time data display area
The time data display area displays the menu (mode) No., menu title, selection item, status, or data. The menu (mode) No. or selection item block blinks while the menu (mode) or selection item is specified (not including the servo menu in the TAPE maintenance mode). For manual adjustment, the data block blinks. In the state where the tape operation (PB, REC, F FWD, and REW) can be performed, the time data display area functions as an ordinary time counter.
There is a menu (mode) that contains insufficient information displayed in the time data display area. Since the information displayed on the superimpose picture is easier to operate and check, usually use a video monitor.

② MENU button
Press this button in the maintenance mode to return to the screen (state) preceding by one step.
The maintenance mode is terminated if this button is pressed when the mode screen is displayed (mode No. M0, M2, or M3 blinks in a time data display area).

③ SET button
Press this button in the maintenance mode to select or execute the menu (mode) selected using a ⑧ search dial.
The maintenance mode can be activated when this SET button is pressed while pressing the ④ CTL/TC/UB button in the setup menu mode with ⑩ DIP switch S1100-2 on the SS-83 board set to ON (upper).

④ CTL/TC/UB button
The maintenance mode can be activated when the ③ SET button is pressed while pressing this button in the setup menu mode with ⑩ DIP switch S1100-2 on the SS-83 board set to ON (upper).

⑤ RESET button
Press this button in the error logger mode to erase the recorded error log.

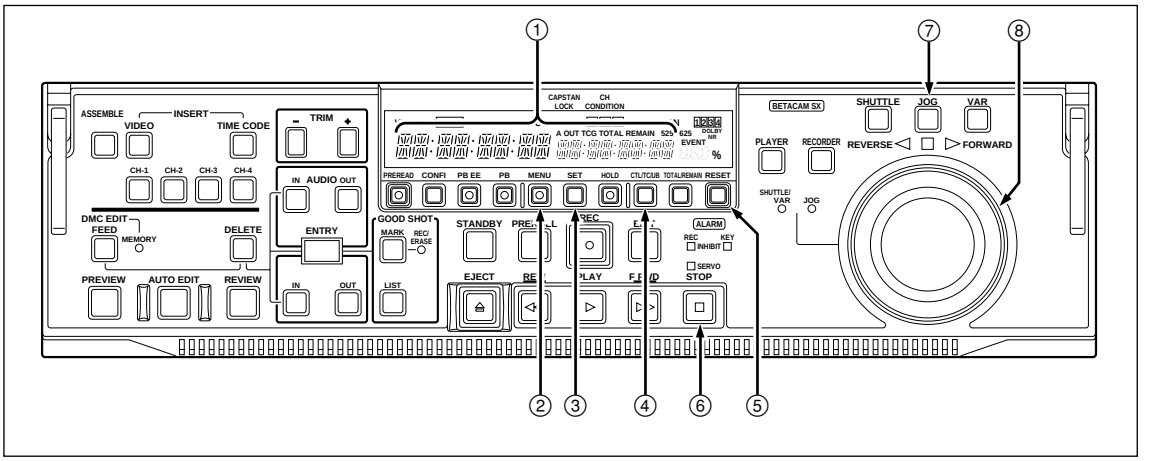
⑥ STOP button
The data value of an electronic volume control can be displayed only while the STOP button is pressed in RF system automatic adjustment menu.

⑦ JOG button
The ⑧ search dial enters the JOG mode when this button is pressed (the lamp does not light in this case). The data value or setting can be changed when the ⑧ search dial is turned while pressing this button.

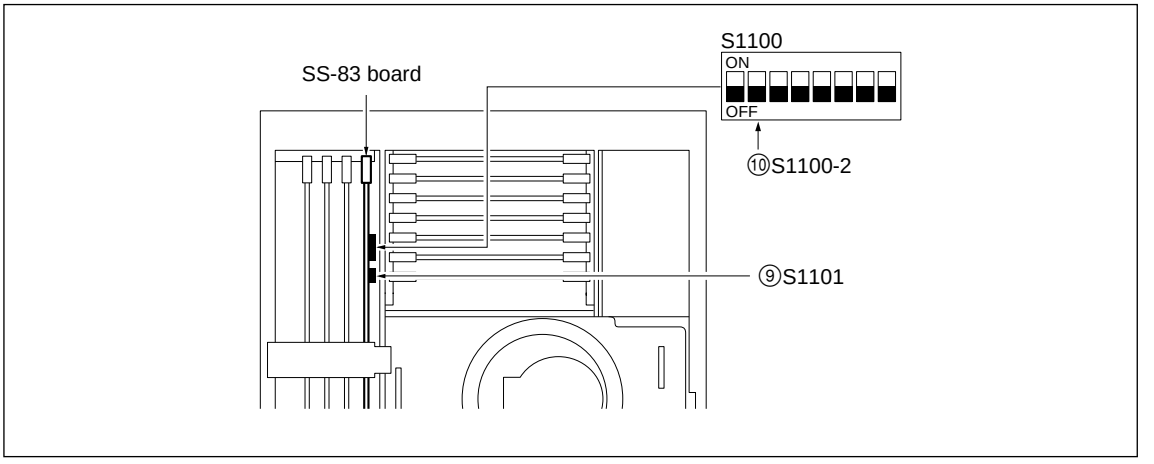
⑧ Search dial
Turn the search dial to specify the menu (mode) or selection item. An "∗" mark moves on the video monitor. In a time data display area, the display is replaced and the specified item blinks. ("JOG DIAL" is displayed on the video monitor.)
The data value or setting can be changed when the search dial is turned while pressing the ⑦ JOG button.

⑨ S1101/SS-83 board: Maintenance mode start switch (MAINTE MODE START)
Press this switch to activate the maintenance mode.

⑩ S1100-2/SS-83 board: Maintenance mode access approval switch (MAINTE MODE Access)
Set this switch to ON (upper) in advance when activating the maintenance mode by the button operation on the control panel.



Lower Control Panel



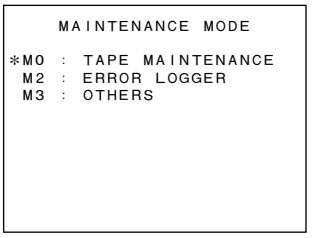
Location of Switches on SS-83 Board

Note

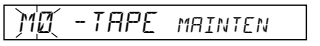
Remove the upper lid referring to Section 2-3-1 when operating the switches on the SS-83 board. Change the setting of DIP switch S1100 with the power switch set to OFF.

Activating the Maintenance Mode

1. Check that the video monitor is connected to the VIDEO OUTPUT COMPOSITE 3 (SUPER) connector.
2. Press the ⑨ S1101 switch (on the SS-83 board).
3. The mode screen in the maintenance mode is superimposed on the video monitor.
   In a ① time data display area, “M0-TAPE MAINTEN” is displayed and the M0 block blinks.



Video Monitor



Time Data Display Area

Activating the Maintenance Mode from Control Panel

The maintenance mode can be activated by the operation below when the S1100-2 switch (on the SS-83 board) is set to ON (upper).

1. Press the ② MENU button once.
   (Execute the setup menu mode from the operation mode.)
2. Press the ③ SET button while pressing the ④ CTL/TC/UB button.
   (Execute the maintenance mode from the setup menu mode.)
3. The mode screen in the maintenance mode is displayed on the video monitor.

Terminating the Maintenance Mode

1. Press the ② MENU button several times to display the mode screen on the video monitor.
   The selected mode No. and title are displayed in a time counter.
2. Press the ② MENU button again to terminate the maintenance mode.

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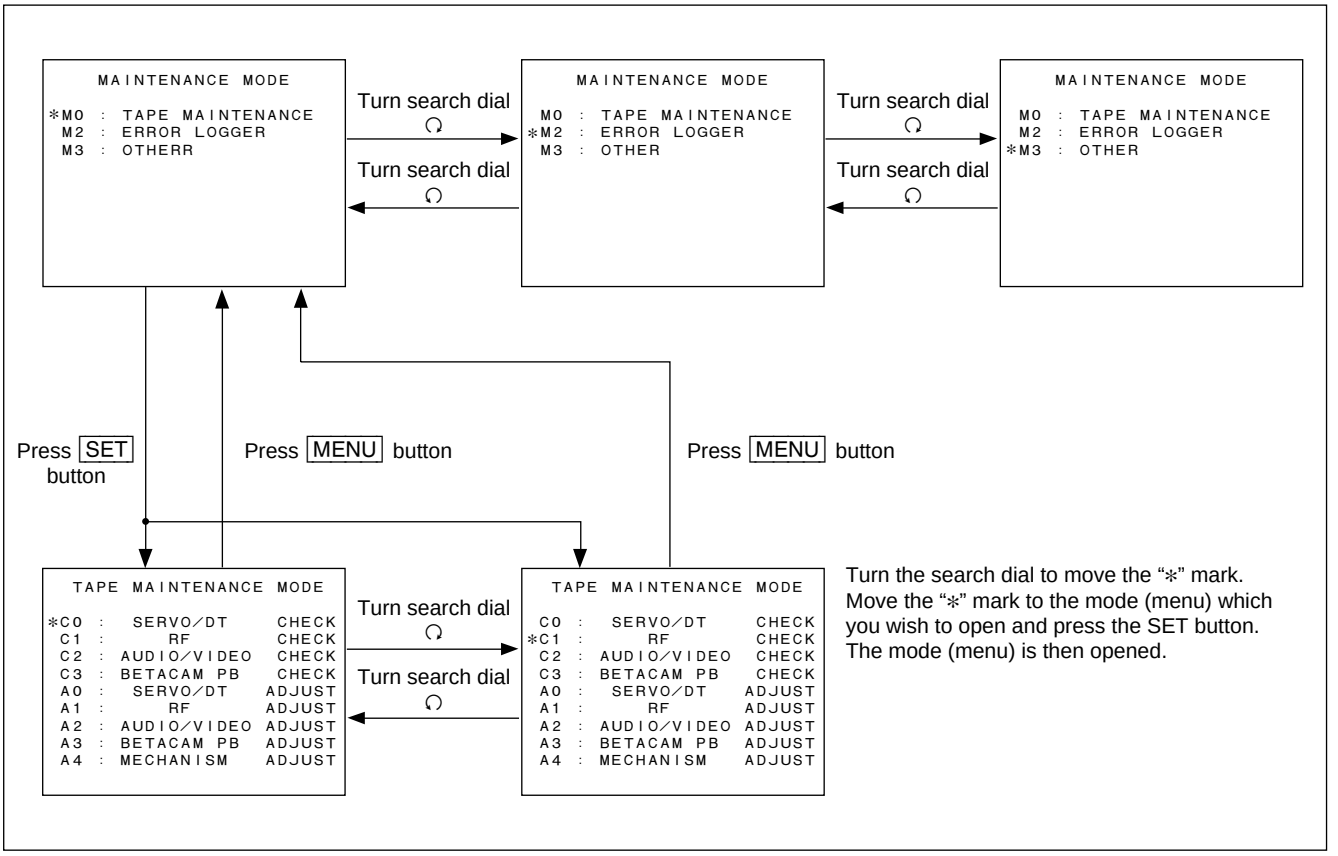
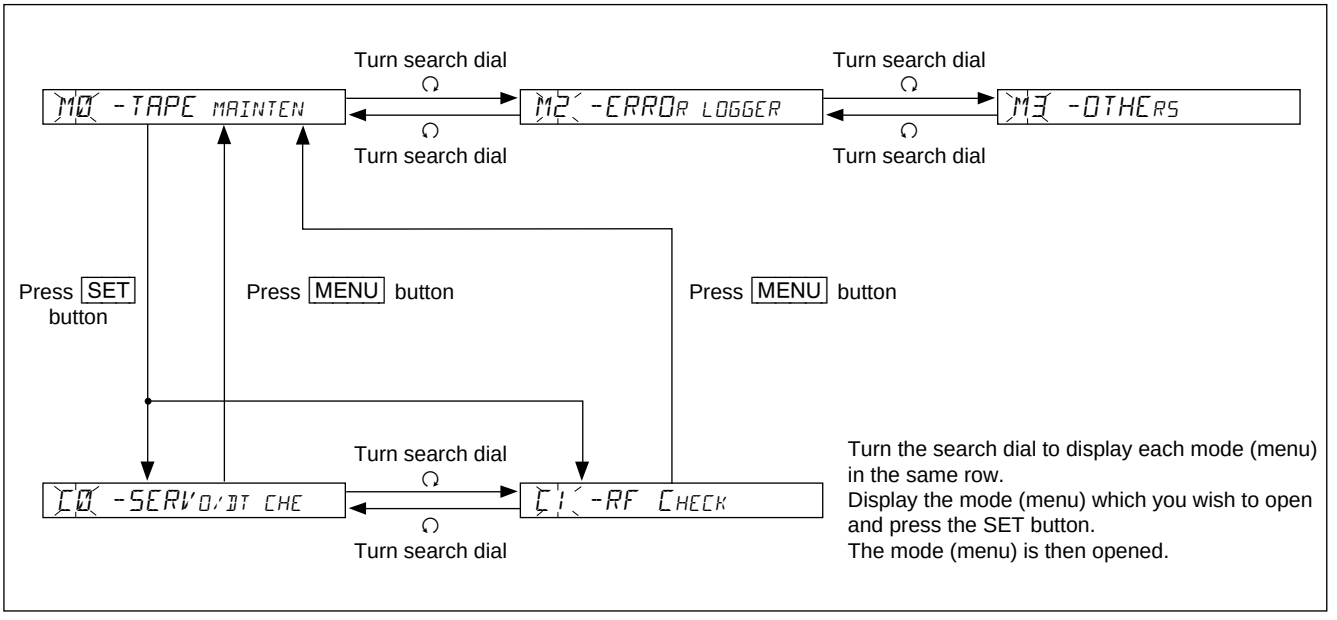
Specifying the Menu (Mode) and Item

How to specify the menu (mode) and item using the search dial (JOG mode) is described below with the mode selection given as an example.


MAINTENANCE MODE
*M0 : TAPE MAINTENANCE
M2 : ERROR LOGGER
M3 : OTHERR
Turn search dial
Turn search dial
MAINTENANCE MODE
M0 : TAPE MAINTENANCE
*M2 : ERROR LOGGER
M3 : OTHER
Turn search dial
Turn search dial
MAINTENANCE MODE
M0 : TAPE MAINTENANCE
M2 : ERROR LOGGER
*M3 : OTHER
Press SET button
Press MENU button
Press MENU button
TAPE MAINTENANCE MODE
*C0 : SERVO/DT CHECK
C1 : RF CHECK
C2 : AUDIO/VIDEO CHECK
C3 : BETACAM PB CHECK
A0 : SERVO/DT ADJUST
A1 : RF ADJUST
A2 : AUDIO/VIDEO ADJUST
A3 : BETACAM PB ADJUST
A4 : MECHANISM ADJUST
Turn search dial
Turn search dial
TAPE MAINTENANCE MODE
C0 : SERVO/DT CHECK
*C1 : RF CHECK
C2 : AUDIO/VIDEO CHECK
C3 : BETACAM PB CHECK
A0 : SERVO/DT ADJUST
A1 : RF ADJUST
A2 : AUDIO/VIDEO ADJUST
A3 : BETACAM PB ADJUST
A4 : MECHANISM ADJUST
Turn the search dial to move the "*" mark.
Move the "*" mark to the mode (menu) which you wish to open and press the SET button.
The mode (menu) is then opened.

Example in Superimpose Picture


M0 -TAPE MAINTEN
Turn search dial
Turn search dial
M2 -ERROR LOGGER
Turn search dial
Turn search dial
M3 -OTHERS
Press SET button
Press MENU button
Press MENU button
C0 -SERVO/DT CHE
Turn search dial
Turn search dial
C1 -RF CHECK
Turn the search dial to display each mode (menu) in the same row.
Display the mode (menu) which you wish to open and press the SET button.
The mode (menu) is then opened.

Example in Time Data Display Area

4-2. TAPE Maintenance Mode (M0)

4-2-1. Overviews

The TAPE maintenance mode is used for the maintenance and check.
This unit has the nine submodes below.

```
  TAPE MAINTENANCE MODE

*C0 :   SERVO/DT     CHECK
 C1 :       RF       CHECK
 C2 : AUDIO/VIDEO    CHECK
 C3 : BETACAM PB     CHECK
 A0 :   SERVO/DT    ADJUST
 A1 :       RF      ADJUST
 A2 : AUDIO/VIDEO   ADJUST
 A3 : BETACAM PB    ADJUST
 A4 : MECHANISM     ADJUST
```

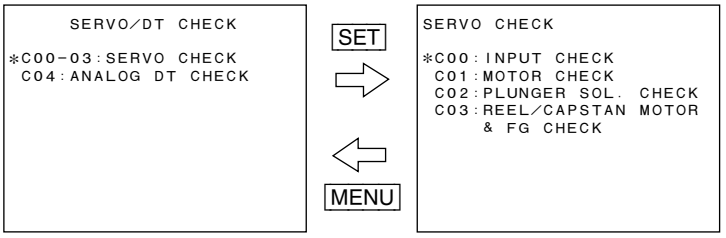
TAPE Maintenance Mode

C0: SERVO/DT CHECK

This submode is used to check the servo and analog DT systems.

C00-03: SERVO CHECK

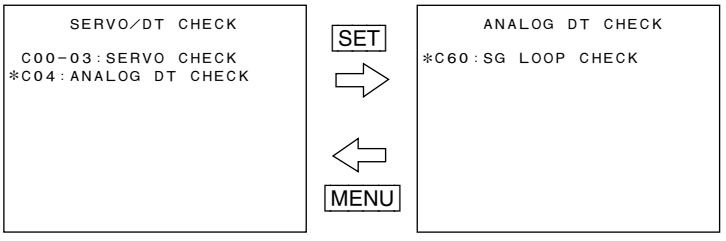
This mode is used to check the servo system. For more details, refer to Section 4-2-2 (on page 4-14).



Title	Page	Description
C00 : INPUT CHECK	—	Check menu of sensors (not including a part of sensors)
C000 : CASSETTE SW	4-15	Checks the cassette tab and REC inhibit sensors.
C001 : CASSETTE COMP. SW	4-16	Checks the cassette-in and cassette size sensors.
C002 : TOP/END SENSOR	4-17	Checks the tape top and tape end sensors.
C003 : DEW SENSOR	4-18	Checks the dew condensation sensors.
C01 : MOTOR CHECK	—	Check menu of motors (except a fan motor) and partial sensors
C010 : S REEL MOTOR	4-19	Checks the S reel motor.
C011 : T REEL MOTOR	4-19	Checks the T reel motor.
C012 : THREADING MOTOR	4-20	Checks the threading motor and threading/unthreading end sensors.
C013 : CASSETTE COMP. MOTOR	4-21	Checks the cassette compartment motor and cassette-down sensors.
C014 : CAPSTAN MOTOR	4-22	Automatically checks the capstan motor.
C015 : DRUM MOTOR	4-23	Automatically checks the drum motor.
C016 : REEL POSITION MOTOR	4-24	Checks the reel shift motor and reel position sensors.
C02 : PLUNGER SOL. CHECK	—	Check menu of solenoids
C020 : PINCH ROLLER	4-25	Checks the pinch roller solenoid.
C021 : S REEL BRAKE	4-26	Checks the S reel brake solenoid.
C022 : T REEL BRAKE	4-26	Checks the T reel brake solenoid.
C023 : CLEANING ROLLER	4-27	Checks the cleaning roller solenoid.
C03 : REEL/CAPSTAN MOTOR & FG CHECK	4-28	Continuous check menu of reel and capstan motors

C04: ANALOG DT CHECK

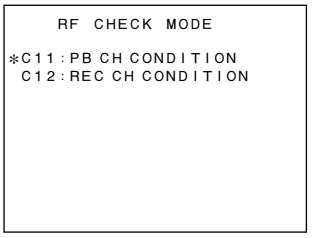
This mode is used to check the analog DT system. For more details, refer to Section 4-2-3 (on page 4-29).



Title	Page	Description
C060 : SG LOOP CHECK	4-29	Checks the feedback loop of the strain gauge for analog Betacam playback.

C1 : RF CHECK

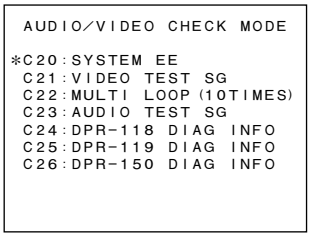
This submode is used to check the RF system.
For more details, refer to Section 4-2-4 (on page 4-30).



Title	Page	Description
C11 : PB CH CONDITION	4-30	Checks the error condition for each PB head (A1, A2, A5, A6, B1, B2, B5, B6, CNFA, and CNFB) in a drum.
C12 : REC CH CONDITION	4-34	Checks the error condition in the insert mode for each PB head (A1, A5, B1, B5, CNFA, and CNFB) in a drum.

C2 : AUDIO/VIDEO CHECK

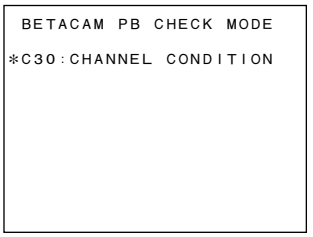
This submode is used to check the audio and video systems.
For more details, refer to Section 4-2-5 (on page 4-37).



Title	Page	Description
C20 : SYSTEM EE	4-37	Sets the system E-E function in the maintenance mode.
C21 : VIDEO TEST SG	4-38	Sets the video test signal generator incorporated into this unit.
C22 : MULTI LOOP (10 TIMES)	4-38	Sets the multi-loop function in the maintenance mode.
C23 : AUDIO TEST SG	4-39	Sets the audio test signal generator incorporated into this unit.
C24 : DPR-118 DIAG INFO	4-39	Displays the result of self diagnostic in DPR-118 board.
C25 : DPR-119 DIAG INFO	4-41	Displays the result of self diagnostic in DPR-119 board. (Used for BKNW-118.)
C26 : DPR-150 DIAG INFO	4-42	Displays the result of self diagnostic in DPR-150 board. (Used for BKNW-124.)

C3 : BETACAM PB CHECK

This submode is used to check the PB system based on a Betacam/Betacam SP format.
For more details, refer to Section 4-2-6 (on page 4-44).



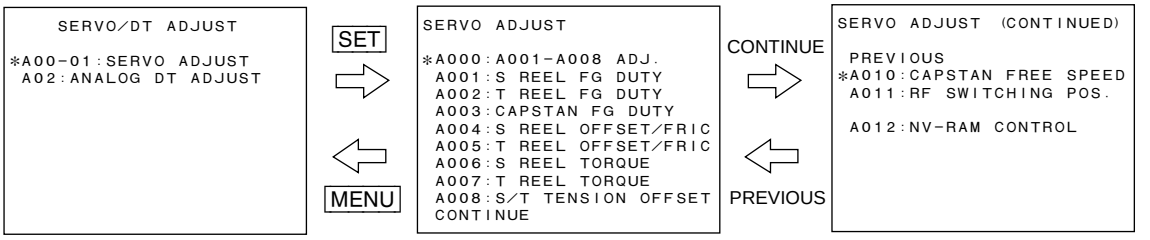
Title	Page	Description
C30 : CHANNEL CONDITION	4-44	Checks the RF level condition for each video channel (Y and C) to be played back.

A0: SERVO/DT ADJUST

This submode is used to adjust the servo and analog DT system.

A00-01: SERVO ADJUST

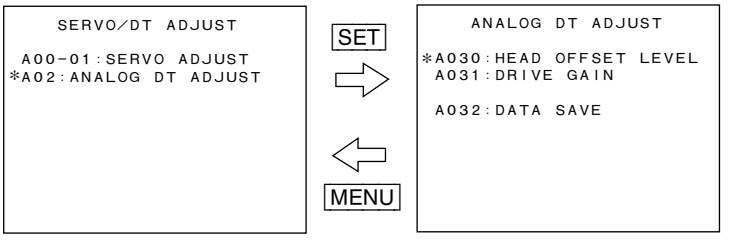
This mode is used to adjust the servo system. For more details, refer to Section 4-2-7 (on page 4-46).



Title	Page	Description
A000 : A001-A008 ADJ.	4-47	Continuously executes the automatic adjustment menus (A001 to A008).
A001 : S REEL FG DUTY	4-48	Automatically adjusts the duty ratio of an S reel FG.
A002 : T REEL FG DUTY	4-48	Automatically adjusts the duty ratio of a T reel FG.
A003 : CAPSTAN FG DUTY	4-48	Automatically adjusts the duty ratio of a capstan FG.
A004 : S REEL OFFSET/FRIC	4-48	Automatically adjusts the S reel offset and friction.
A005 : T REEL OFFSET/FRIC	4-48	Automatically adjusts the T reel offset and friction.
A006 : S REEL TORQUE	4-48	Automatically adjusts the S reel torque.
A007 : T REEL TORQUE	4-48	Automatically adjusts the T reel torque.
A008 : S/T TENSION OFFSET	4-48	Automatically adjusts the tension regulator offset values on the S and T sides.
A010 : CAPSTAN FREE SPEED	4-49	Automatically adjusts the capstan free speed.
A011 : RF SWITCHING POS.	4-50	Automatically adjusts the RF switching position.
A012 : NV-RAM CONTROL	4-52	Saves the adjustment data in a servo system.

A02: ANALOG DT ADJUST

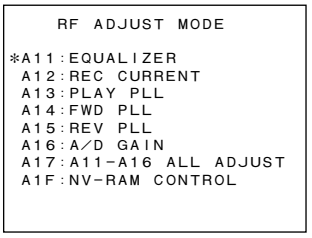
This mode is used to adjust the analog DT system. For more details, refer to Section 4-2-8 (on page 4-53).



Title	Page	Description
A030 : HEAD OFFSET LEVEL	4-53	Adjusts the offset level of an analog Betacam PB head.
A031 : DRIVE GAIN	4-55	Adjusts the drive gain of an analog DT system.
A032 : DATA SAVE	4-57	Saves the adjustment data in an analog DT system.

A1 : RF ADJUST

This submode is used to adjust the RF system.
For more details, refer to Section 4-2-9 (on page 4-58).



Title	Page	Description
A11 : EQUALIZER	4-58	Automatically adjusts the PB head playing back level and PB equalizer (for A1, A2, A5, A6, B1, B2, B5, B6, CNFA, and CNFB channels).
A12 : REC CURRENT	4-58	Automatically adjusts the recording current.
A13 : PLAY PLL	4-58	Automatically adjusts the PB PLL circuit (in the PLAY mode).
A14 : FWD PLL	4-58	Automatically adjusts the PB PLL circuit (in the FORWARD mode).
A15 : REV PLL	4-58	Automatically adjusts the PB PLL circuit (in the REVERSE mode).
A16 : A/D GAIN	4-58	Automatically adjusts the gain when a PB RF signal is converted from analog to digital.
A17 : A11-A16 ALL ADJUST	4-63	Continuously executes the above automatic adjustment menus A11 to A16.
A1F : NV-RAM CONTROL	4-65	Saves the adjustment data in an RF system.

A2 : AUDIO/VIDEO ADJUST

This submode is used to adjust the audio and video systems.
For more details, refer to Section 4-2-10 (on page 4-66).

```
AUDIO/VIDEO ADJUST MODE

*A20:VPR VR
 A21:AD VR
 A22:AD VR (LOOP)
 A23:SDI/SDTI VR
 A24:INPUT CF DETECT
 A25:DEC VR
 A26:DEC VR (LOOP)
 A2F:NV-RAM CONTROL
```

Title	Page	Description
A20 : VPR VR	4-67	Adjusts the reference signal system and analog video output system on the VPR-47 board.
A21 : AD VR	4-68	Adjusts the analog component video input system.
A22 : AD VR (LOOP)	4-68	Adjusts the analog component video input system (in the multi-loop state).
A23 : SDI/SDTI VR	4-69	Adjustment menu for the SDI and SDTI input/output interfaces
A231 : SDI ENC1 VCO	4-69	Automatically adjusts the SDI output interface.
A232 : SDI ENC2 VCO	4-69	Automatically adjusts the SDI output interface.
A233 : SDI DEC VCO	4-69	Automatically adjusts the SDI input interface.
A234 : SDTI ENC VCO	4-69	Automatically adjusts the SDTI (SX) output interface. (Used for BKNW-118.)
A235 : SDTI-CP ENC VCO	4-69	Automatically adjusts the SDTI-CP output interface. (Used for BKNW-124.)
A24 : INPUT CF DETECT	4-71	Automatically adjusts the color frame detection timing of a composite video input.
A25 : DEC VR	4-73	Adjusts the composite video input system.
A26 : DEC VR (LOOP)	4-73	Adjusts the composite video input (in the multi-loop state).
A2F : NV-RAM CONTROL	4-74	Saves the adjustment data in audio and video systems.

A3 : BETACAM PB ADJUST

This submode is used to adjust the PB system based on a Betacam/Betacam SP format.
For more details, refer to Section 4-2-11 (on page 4-75).

```
 BETACAM PB ADJUST MODE

*A30:EQ VR
 A32:DM VR 1
 A33:DM VR 2
 A34:DM VR 3
 A35:DM VR 4
 A36:DM VR 5
 A37:TBC VR
 A3F:NV-RAM CONTROL
```

Title	Page	Description
A30 : EQ VR	4-75	Adjusts the gain of an analog Betacam PB RF amplifier (EQ-75 board).
A32 : DM VR 1	4-76	Adjusts the frequency characteristics of a primary cosine equalizer (DM-89 board).
A33 : DM VR 2	4-76	Adjusts the frequency characteristics of a secondary cosine equalizer (main) (DM-89 board).
A34 : DM VR 3	4-76	Adjusts the frequency characteristics of a secondary cosine equalizer (sub) (DM-89 board).
A35 : DM VR 4	4-76	Adjusts the guard band width and sets the DC offset level of an over-modulation compensation circuit (DM-89 board).
A36 : DM VR 5	4-76	Adjusts the threshold level of a dropout and sets the threshold level of an RF envelope (DM-89 board).
A37 : TBC VR	4-76	Sets the read clock timing and the data of a PB VISC phase detection circuit (TBC-23A board).
A3F : NV-RAM CONTROL	4-77	Saves the adjustment data in an analog Betacam PB system.

A4 : MECHANISM ADJUST

This submode is used to adjust the mechanism part.
For more details, refer to Section 4-2-12 (on page 4-78).

```
    MECHANISM ADJUST

*A40:PATH MODE SEL
```

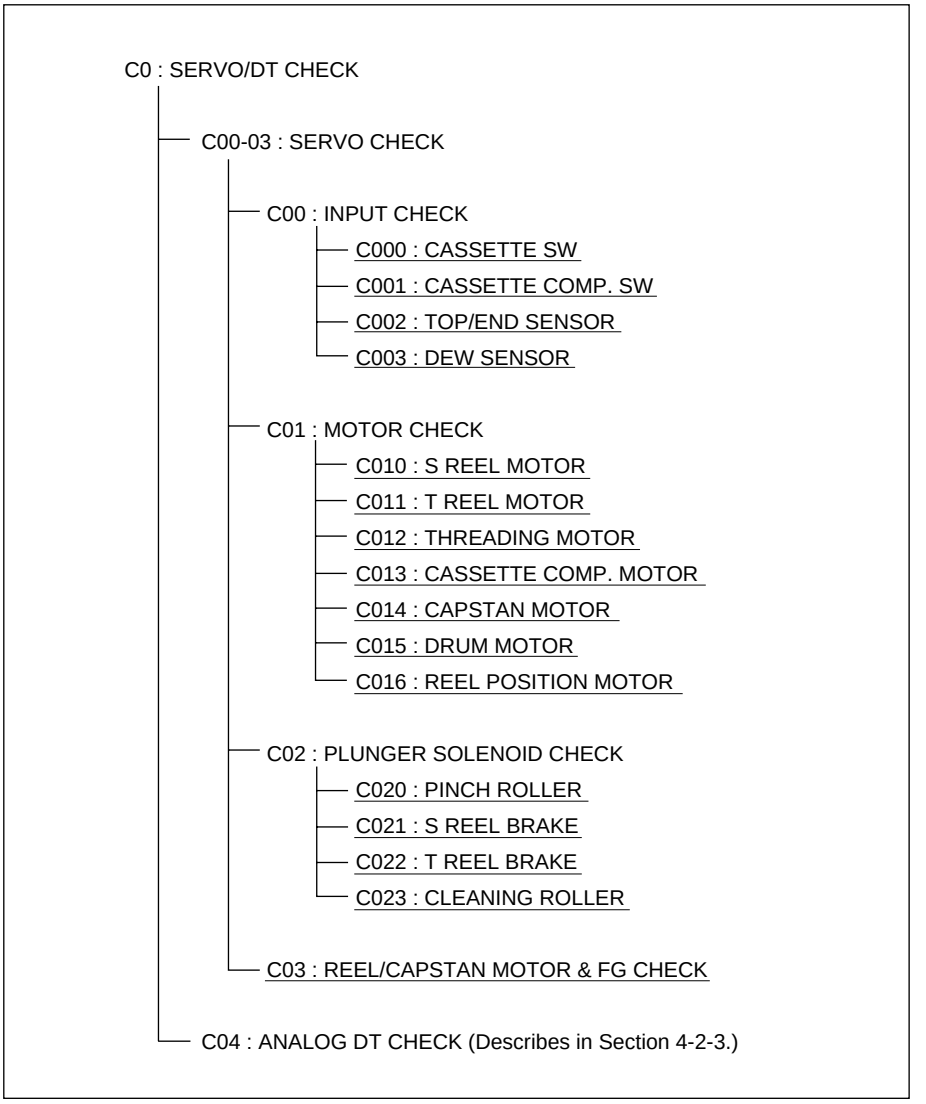
Title	Page	Description
A40 : PATH MODE SEL	4-78	Sets the tape PB mode. (Used for tape transport adjustment.)

4-2-2. SERVO CHECK Mode (C00-03)

The C00-03 : SERVO CHECK mode is used to check the servo system. The underlined menus and submenus in the menu tree below are described next.

Note

In the servo check mode, only the menu number is displayed in the time data display area. (C00-03 is displayed as “C00”.)


C0 : SERVO/DT CHECK
C00-03 : SERVO CHECK
C00 : INPUT CHECK
C000 : CASSETTE SW
C001 : CASSETTE COMP. SW
C002 : TOP/END SENSOR
C003 : DEW SENSOR
C01 : MOTOR CHECK
C010 : S REEL MOTOR
C011 : T REEL MOTOR
C012 : THREADING MOTOR
C013 : CASSETTE COMP. MOTOR
C014 : CAPSTAN MOTOR
C015 : DRUM MOTOR
C016 : REEL POSITION MOTOR
C02 : PLUNGER SOLENOID CHECK
C020 : PINCH ROLLER
C021 : S REEL BRAKE
C022 : T REEL BRAKE
C023 : CLEANING ROLLER
C03 : REEL/CAPSTAN MOTOR & FG CHECK
C04 : ANALOG DT CHECK (Describes in Section 4-2-3.)

Menu Tree of Servo System Check Mode

Note

When the unit has a cassette tape, the cassette tape is automatically ejected on shifting to any lower-level menu from the C00-03 : SERVO CHECK menu.

http://getMANUAL.com

C000 : CASSETTE SW

This submenu checks the functions of six cassette tab sensors and three REC inhibit sensors (switches).

```
SERVO CHECK
 INPUT CHECK

C000:CASSETTE SW
 1:REEL HUB   2:METAL/OX
 3:THICKNESS  4:SPARE
 5:SPARE      6:DGTL/ANLG
 7:S REC INH  8:L REC INH
 9:L SP INH
                  7  123  9
 SW 987654321      4 5  8
    000000000       6
```

(Ex.: When pushing the switch ⑦)

```
SERVO CHECK
 INPUT CHECK

C000:CASSETTE SW
 1:REEL HUB   2:METAL/OX
 3:THICKNESS  4:SPARE
 5:SPARE      6:DGTL/ANLG
 7:S REC INH  8:L REC INH
 9:L SP INH
                  7  123  9
 SW 987654321      4 5  8
    001000000       6
```

Checking

Be sure to check each sensor (switch).

(1) Push a sensor (switch) with a finger, and hold it.
- Check the superimposed display to see that a character below the corresponding SW number changes from “0” to “1”.

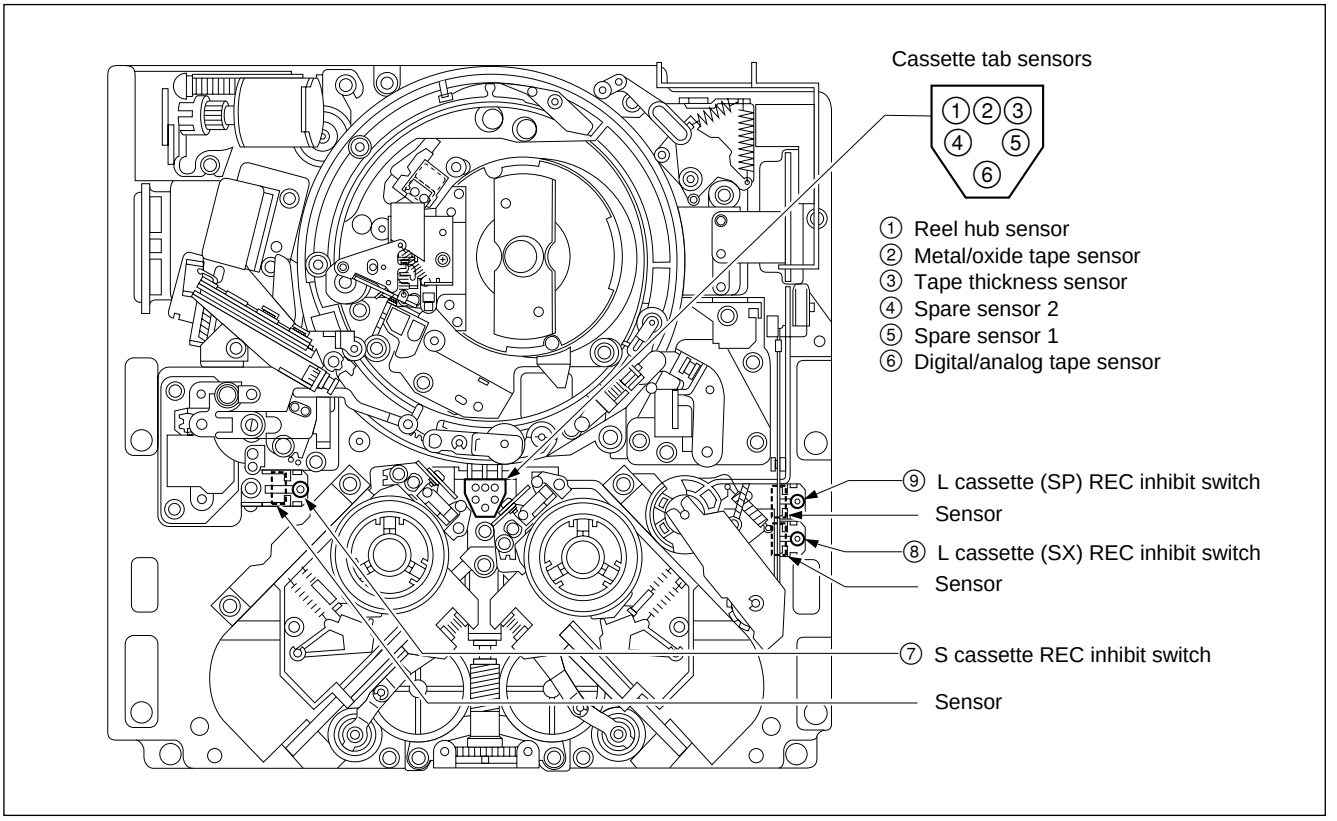
(2) Release the sensor (switch).
- Check the superimposed display to see that above-mentioned “1” returns to “0”.

(3) To finish the check, press the MENU button once.

In case of NG

When any cassette tab sensor (① to ⑥) is NG:
- Check the corresponding sensor on the PTC-59 board.
- Check the corresponding sensor input port of MPU (IC1 on the MS-58 board).

When any REC inhibit sensor (⑦ to 9) is NG:
- Check the corresponding sensor on the MS-58 board.
- Check the corresponding sensor input port of MPU (IC1 on the MS-58 board).



Locations of Sensors (Switches)

C001 : CASSETTE COMP. SW

This submenu checks the functions of three sensors (switches) in a compartment.

```
SERVO CHECK
 INPUT CHECK

C001:CASSETTE COMP. SW
 SW1:CASSETTE IN SW 1
 SW2:CASSETTE IN SW 2
 SW3:LARGE CASSETTE SW

      3  1      2
```

Checking

Be sure to check each sensor (switch). These switches interlock with sensors.

Switch	Sensor
SW1 : Cassette-in switch 1	Cassette-in sensor (L)
SW2 : Cassette-in switch 2	Cassette-in sensor (R)
SW3 : L cassette detection switch	Cassette size sensor

(Ex.)

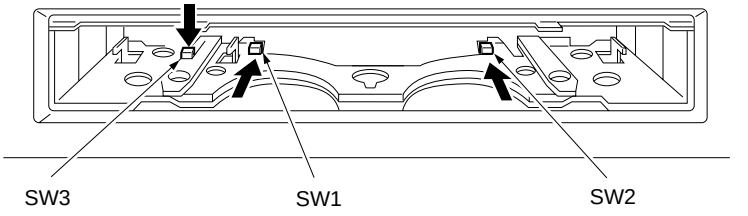
```
SERVO CHECK
 INPUT CHECK

C001:CASSETTE COMP. SW
 SW1:CASSETTE IN SW 1
 SW2:CASSETTE IN SW 2
 SW3:LARGE CASSETTE SW

      3  □      2
```

(1) Push up the cassette door to the inside with one finger, and hold it.
(2) Push a switch in the direction indicated by the allow with another finger, and hold it.
  • Check the superimposed display to see that the corresponding SW number changes to "□".
(3) Release the switch.
  • Check to see that above-mentioned "□" returns to the former switch number.
(4) To finish the check, press the MENU button once.

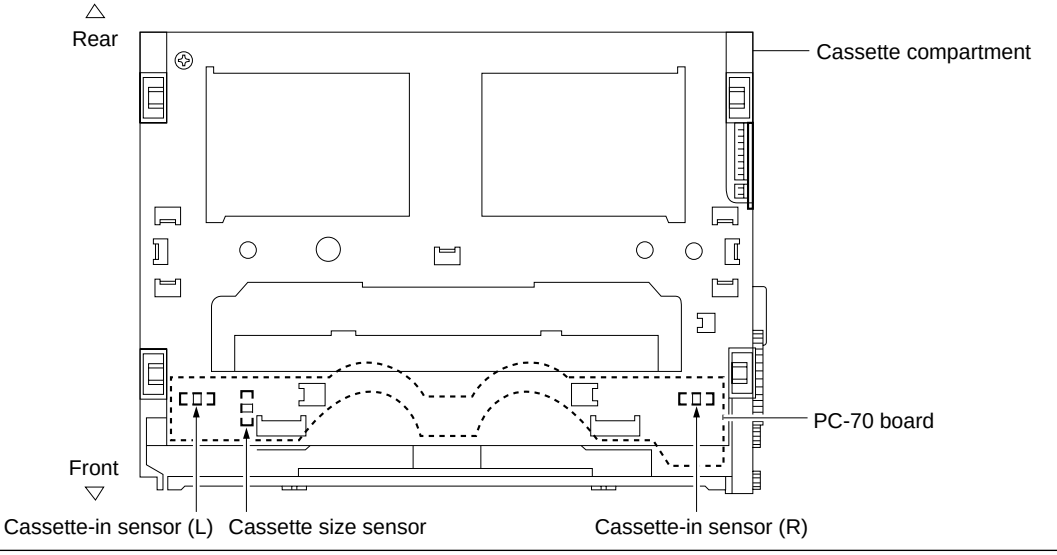
In case of NG

• Check the corresponding sensor on the PC-70 board.
• Check the corresponding sensor input port of MPU (IC1 on the MS-58 board).

Push the cassette window up manually. Push the switch in the direction of thick arrow.



Locations of Switches in Compartment Block



Locations of Sensors

C002 : TOP/END SENSOR

This submenu checks the functions of a tape top sensor and a tape end sensor.

```
SERVO CHECK
 INPUT CHECK

C002:TOP/END SENSOR

   END          TOP
 SENSOR       SENSOR

   OFF          OFF
```

Checking

Be sure to check each sensor.

(1) Approach a metallic screwdriver to a sensor.
- Check the superimposed display to see that a character string below the corresponding sensor name changes from “OFF” to “ON!”.

Note

Do not contact the screwdriver with each sensor.

(2) Distance the screwdriver from the sensor.
- Check to see that above-mentioned “ON!” returns to “OFF”.

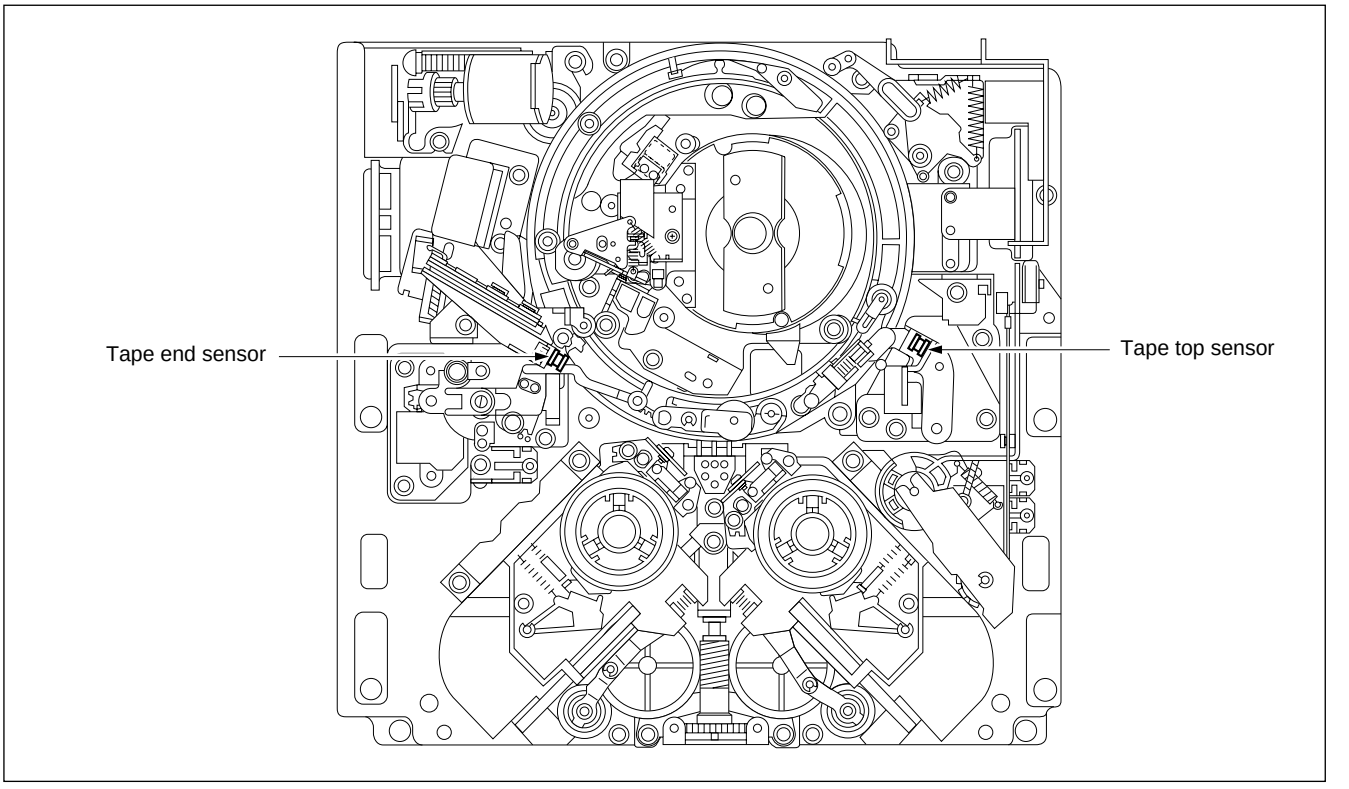
(3) To finish the check, press the MENU button once.

(Ex.)

```
SERVO CHECK
 INPUT CHECK

C002:TOP/END SENSOR

   END          TOP
 SENSOR       SENSOR

   OFF          ON!
```

In case of NG

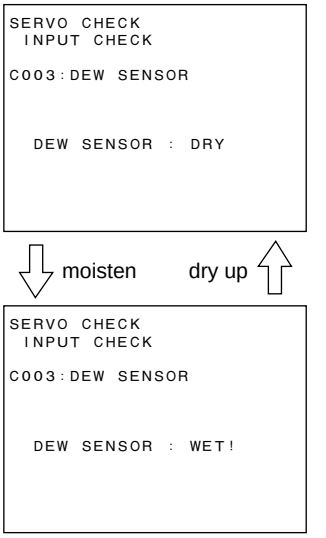
- Check the sensor itself.
- Check the oscillator and detection circuit on the MS-58 board for sensors.
- Check the corresponding sensor input port (IC115 on the SS-83 board).



Locations of Tape Top and Tape End Sensors

C003 : DEW SENSOR

This submenu checks the function of a dew condensation sensor.



Checking

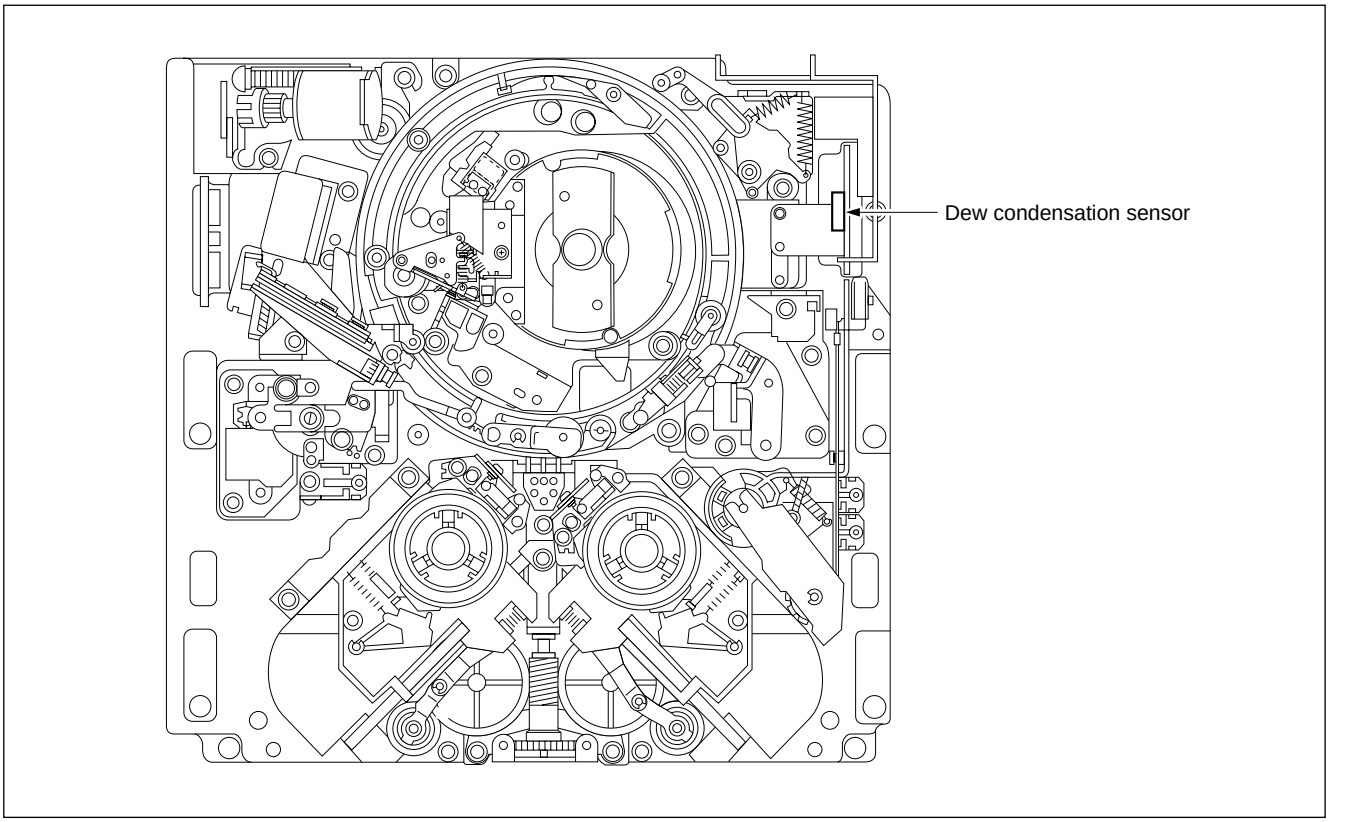
(1) Slightly touch the sensor using a cotton swab moistened by water.
- Check the superimposed display to see that a character string changes from "DRY" to "WET!".

(2) Wipe the sensor using a dry cotton swab to eliminate the moisture or evaporating the moisture completely using a blower.
- Check to see that "WET!" returns to "DRY".

(3) To finish the check, press the MENU button once.

In case of NG

- Check each sensor itself.
- Check the detection circuit on the MS-58 board.
- Check the sensor input port of MPU (IC1 on the MS-58 board).



Location of Dew Condensation Sensor

C010 : S REEL MOTOR
C011 : T REEL MOTOR

```
SERVO CHECK
 MOTOR CHECK
C010:S REEL MOTOR


 TURN JOG DIAL
      IN JOG MODE
```

These submenus check the function of an S reel motor or T reel motor.

Checking

(1) Turn the search dial (in JOG mode).
- Check to see that the reel table rotates in the specified direction at a fixed speed (about one revolution per second) after releasing the reel brake.

Rotating direction of search dial	Rotating direction of reel table
FORWARD (↺)	Clockwise (↺)
REVERSE (↻)	Counterclockwise (↻)

```
SERVO CHECK
 MOTOR CHECK
C011:T REEL MOTOR


 TURN JOG DIAL
      IN JOG MODE
```

(2) Holt the rotation of the search dial.
- Check to see that the reel table stops and that the reel brake operates.

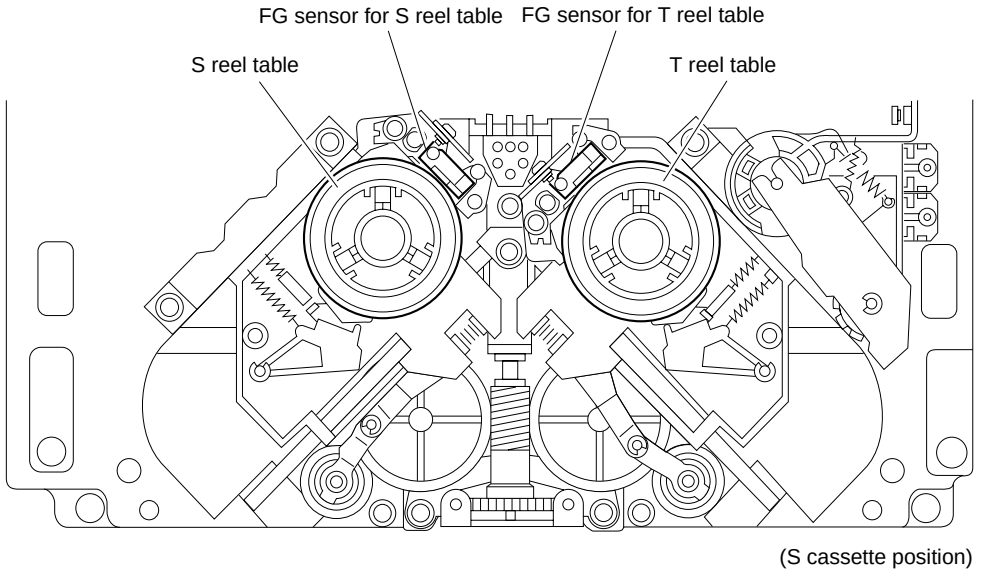
(3) To finish the check, press the MENU button once.

In case of NG

When the reel table operation is defective:
- Check the reel motor driver circuit on the DR-315 board.
- Check the reel motor.

When the reel table rotation is not constant at the fixed speed:
- Adjust the duty ratio of an S reel FG or T reel FG using a submenu A001 or A002.
- Check the FG output from a reel table FG sensor (DME on the SE-344 board).
- Check the reel FG shaping circuit on the MS-58 board.

When the reel brake operation is defective:
- Check an S or T brake solenoid using a submenu C021 or C022.



Locations of Reel Table FG Sensors

C012 : THREADING MOTOR

This submenu checks the functions of a threading motor, threading end sensor, and unthreading end sensor.

```
SERVO CHECK
 MOTOR CHECK
C012:THREADING MOTOR

  *** UNTHREAD END ***


 TURN JOG DIAL
      IN JOG MODE
  FWD:THREAD,  REV:UNTH
```

DIAL (↺) ⇩ DIAL (↺) ⇧

```
SERVO CHECK
 MOTOR CHECK
C012:THREADING MOTOR

       . . . . . .


 TURN JOG DIAL
      IN JOG MODE
  FWD:THREAD,  REV:UNTH
```

DIAL (↺) ⇩ DIAL (↺) ⇧

```
SERVO CHECK
 MOTOR CHECK
C012:THREADING MOTOR

   *** THREAD END ***


 TURN JOG DIAL
      IN JOG MODE
  FWD:THREAD,  REV:UNTH
```

Checking

(1) Turn the search dial (in JOG mode) slowly continuously in FORWARD (↺) direction.
- Check to see that a threading ring rotates counterclockwise (↺) and that a message on the superimposed display changes from “UNTHREAD END” to “.....”.
- Check to see that the threading ring stops in the threading end state and that the message changes from “.....” to “THREAD END”.

Note

When the search dial pauses halfway, the threading ring also stops.

(2) Turn the search dial (in JOG mode) slowly continuously in REVERSE (↺) direction.
- Check to see that the threading ring rotates clockwise (↺) and that the message changes from “THREAD END” to “.....”.
- Check to see that the threading ring stops in the unthreading end state and that the message changes from “.....” to “UNTHREAD END”.

Note

When the search dial pauses halfway, the threading ring also stops.

(3) To finish the check, press the MENU button once in the unthreading end state.

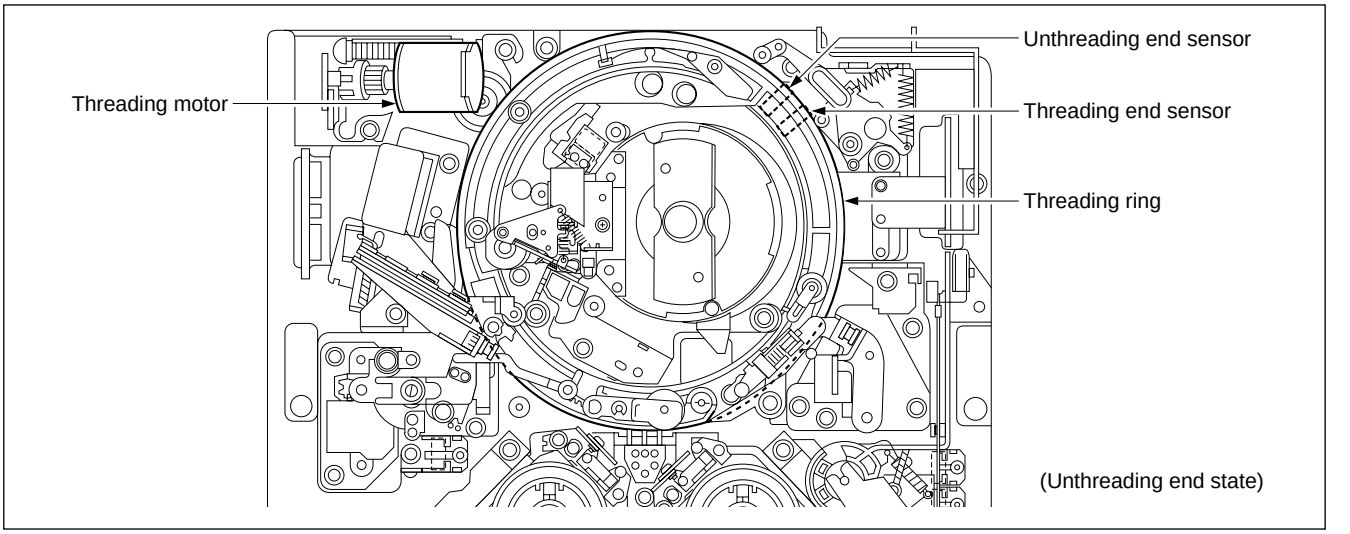
Note

Unless the unthreading end state, a massage “SET UNTHREAD END TO RETURN” will be displayed on pressing the MENU button.

```
SERVO CHECK
 MOTOR CHECK
C012:THREADING MOTOR

   *** THREAD END ***
 #   SET UNTHREAD END   #
 #       TO RETURN      #
 TURN JOG DIAL
      IN JOG MODE
  FWD:THREAD,  REV:UNTH
```

In case of NG

- Check the mechanical abnormality.
- Check the threading motor driver circuit on the DR-315 board.
- Check the threading motor.
- Check the threading end sensor or unthreading end sensor on the TR-79 board.
- Check the sensor input port of MPU (IC1 on the MS-58 board).



Locations of Threading End and Unthreading End Sensors

C013 : CASSETTE COMP. MOTOR

This menu checks the functions of a cassette compartment motor and cassette-down sensor.

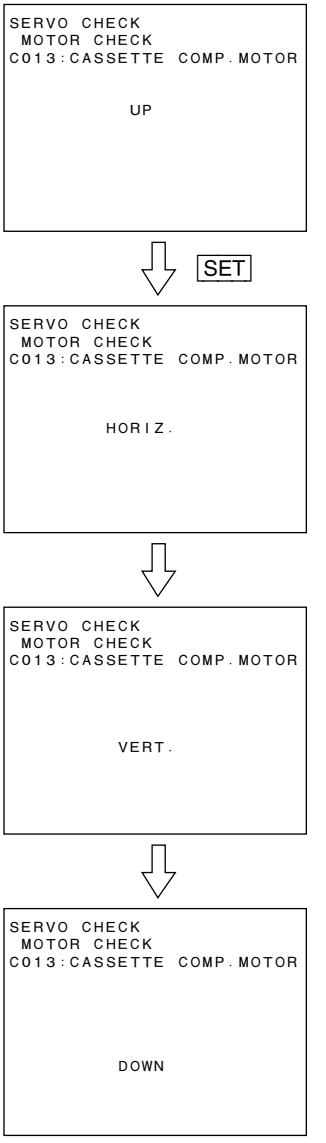
CAUTION

Be careful not to execute this menu with the foreign matter put into the cassette compartment.

When a cassette tape is located in the cassette insertion slot, remove the cassette tape. If this menu executes without removing, the cassette tape will be caught halfway.

Notes

- If the cassette compartment has stopped halfway due to abnormality, “HORIZ.” or “VERT.” will be displayed on the superimposed display on selecting this menu.
- The power supply to the motor stops to protect the motor and movable parts when the driving time of the motor continuously exceeds about six seconds.



Checking

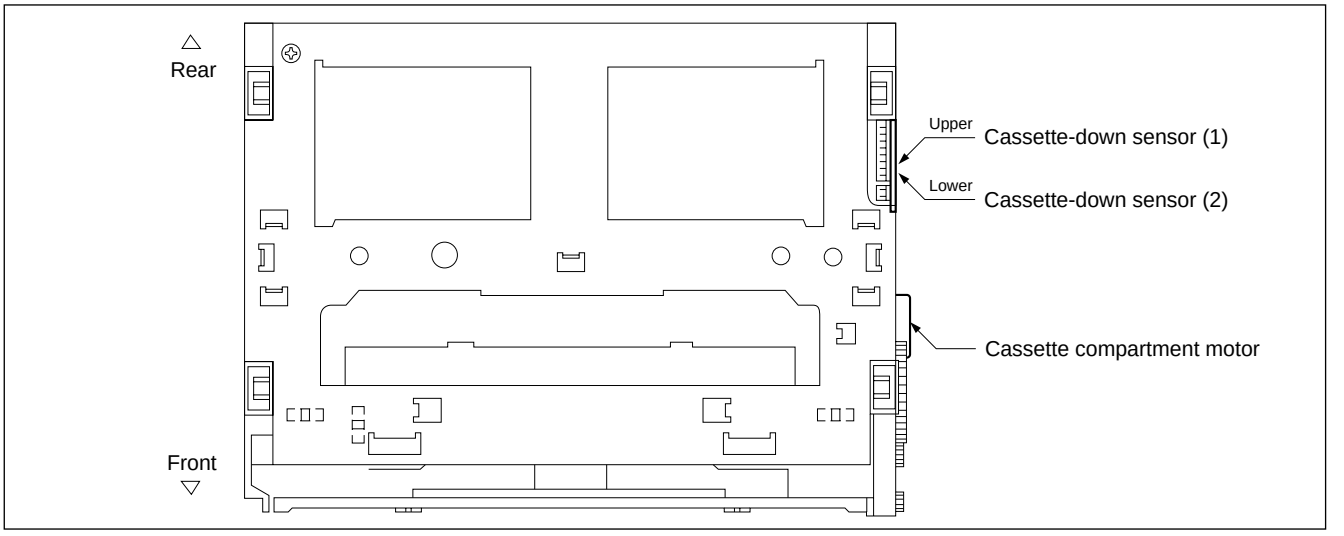
(1) When displaying “UP” on the superimposed display, press the SET button once.
- Check to see that the compartment goes down.
- Check to see that “UP” changes as follows:
  UP ⇨ HORIZ. ⇨ VERT. ⇨ DOWN

(2) When displaying “DOWN” , press the SET button once.
- Check to see that the compartment goes up.
- Check to see that “DOWN” changes as follows:
  DOWN ⇨ VERT. ⇨ HORIZ. ⇨ UP

(3) To finish the check, press the MENU button once.

In case of NG

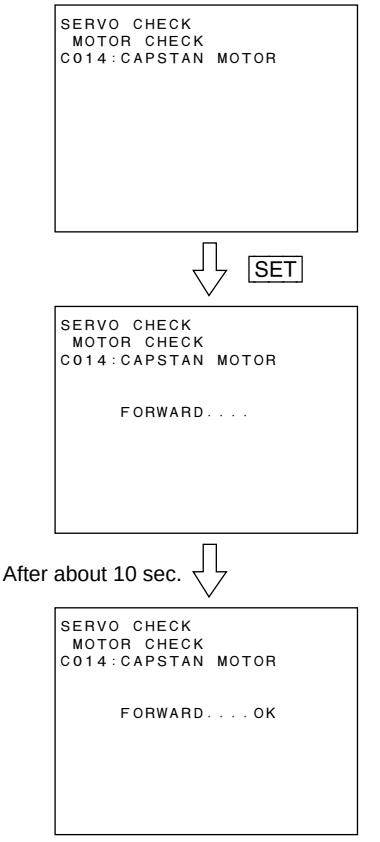
- Check the mechanical abnormality.
- Check the cassette compartment motor driver circuit on the DR-315 board.
- Check the cassette compartment motor.
- Check the cassette-down sensor (s) on the CL-29 board.
- Check the sensor input port of MPU (IC1 on the MS-58 board).



Top View of Cassette Compartment

C014 : CAPSTAN MOTOR

This submenu checks the function of a capstan motor.



Checking

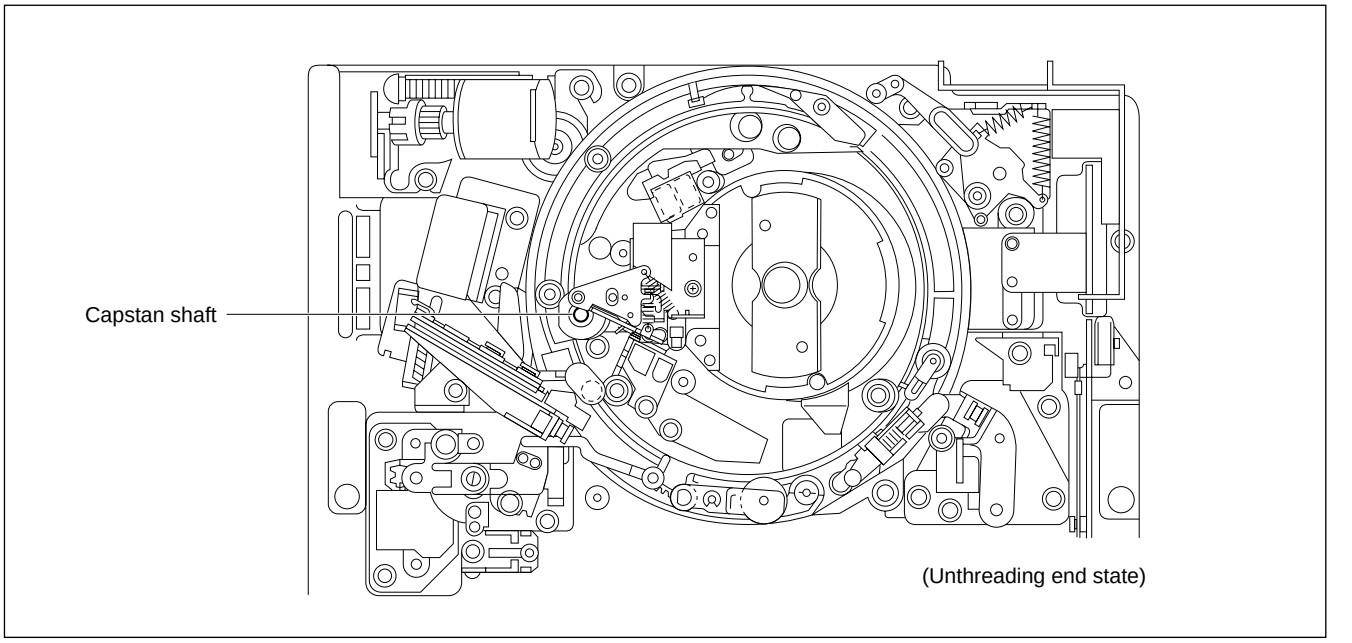
(1) Press the SET button.
- Check to see that a capstan shaft rotates in the forward (↺) direction.
- Check to see that the capstan shaft stops after displaying a message "FORWARD....OK" on the superimposed display.

(2) Press the SET button again.
- Check to see that the capstan shaft rotates in the reverse (↻) direction.
- Check to see that the capstan shaft stops after displaying a message "REVERSE....OK" on the superimposed display.

(3) To finish the check, press the MENU button once.

In case of NG

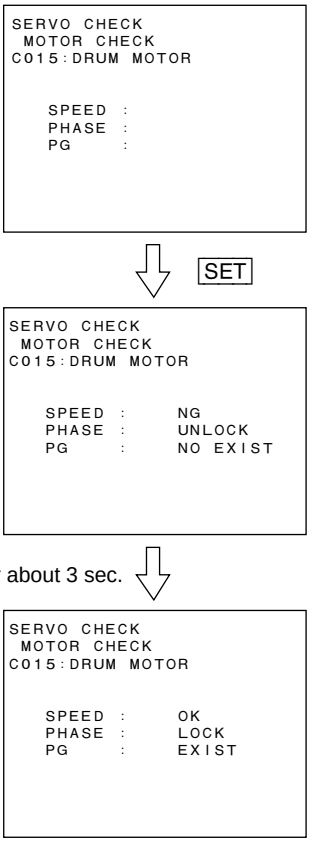
- Check the mechanical abnormality.
- Check the capstan motor driver circuit on the DR-315 board.
- Check the FG output from the capstan motor.
- Check the capstan FG shaping circuit on the MS-58 board.
- Check each circuit that processes the capstan FG on the SS-83 board.
- Check the capstan motor.



Location of Capstan Shaft

C015 : DRUM MOTOR

This submenu checks the function of a drum motor.



Checking

(1) Press the SET button.
- Check to see that the drum rotates.
- Check to see that the superimposed display changes as shown on the right.

(2) To finish the check, press the MENU button once.
- Check to see that the drum stops.

In case of NG

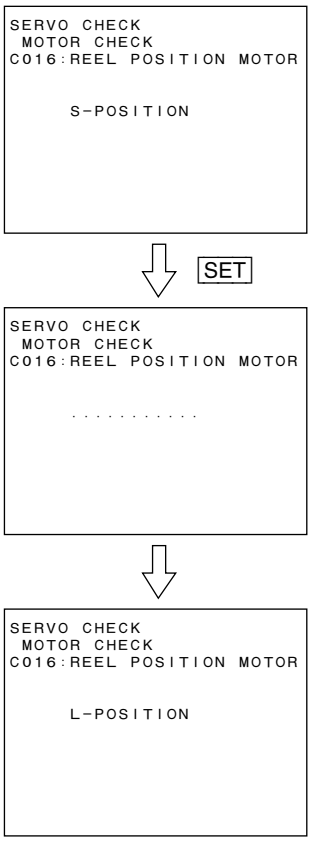
- Check the mechanical abnormality.
- Check the drum motor driver circuit on the DR-315 board.
- Check the FG and PG outputs from the drum motor.
- Check the drum FG/PG shaping circuit on the DR-315 board.
- Check each circuit that processes the drum FG/PG on the SS-83 board.

C016 : REEL POSITION MOTOR

This submenu checks the functions of a reel shift motor and two reel position sensors.

Note

The power supply to the motor stops to protect the motor and movable parts when the driving time of the motor continuously exceeds about six seconds.



Checking

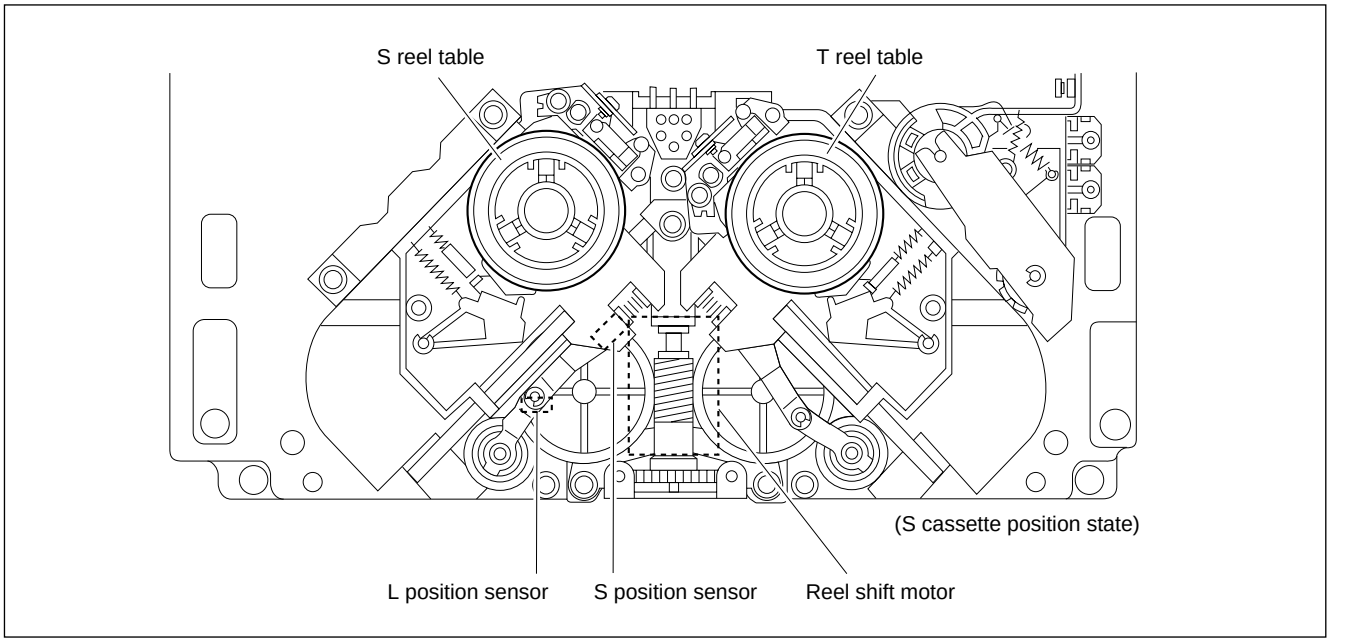
(1) When displaying “S-POSITION” on the superimposed display, press the SET button once.
- Check to see that an S and T reel tables move from the S position (S cassette position) to the L position (L cassette position).
- Check to see that “S-POSITION” changes as follows:
  S-POSITION ⇨ ..... ⇨ L-POSITION

(2) When displaying “L-POSITION”, press the SET button once.
- Check to see that the S and T reel tables move from the L position (L cassette position) to the S position (S cassette position).
- Check to see that “L-POSITION” changes as follows:
  L-POSITION ⇨ ..... ⇨ S-POSITION

(3) To finish the check, press the MENU button once.

In case of NG

- Check the mechanical abnormality.
- Check the reel shift motor driver circuit on the DR-315 board.
- Check the reel shift motor.
- Check the S or T position sensor on the PTC-71 board.
- Check the sensor input port of MPU (IC1 on the MS-58 board).



Locations of S and L Position Sensors and Reel Shift Motor

http://getMANUAL.com

C020 : PINCH ROLLER

This submenu checks the function of a pinch roller solenoid.

```
SERVO CHECK
 PLUNGER SOLENOID
C020:PINCH ROLLER
```

Checking

(1) Press the SET button once.
- Check a click sound when the pinch roller solenoid is activated.

Note

A pinch lever comes near the capstan.

(2) Press the MENU button once to exit the submenu.

Note

The solenoid is deactivated because its driving voltage is cut off.

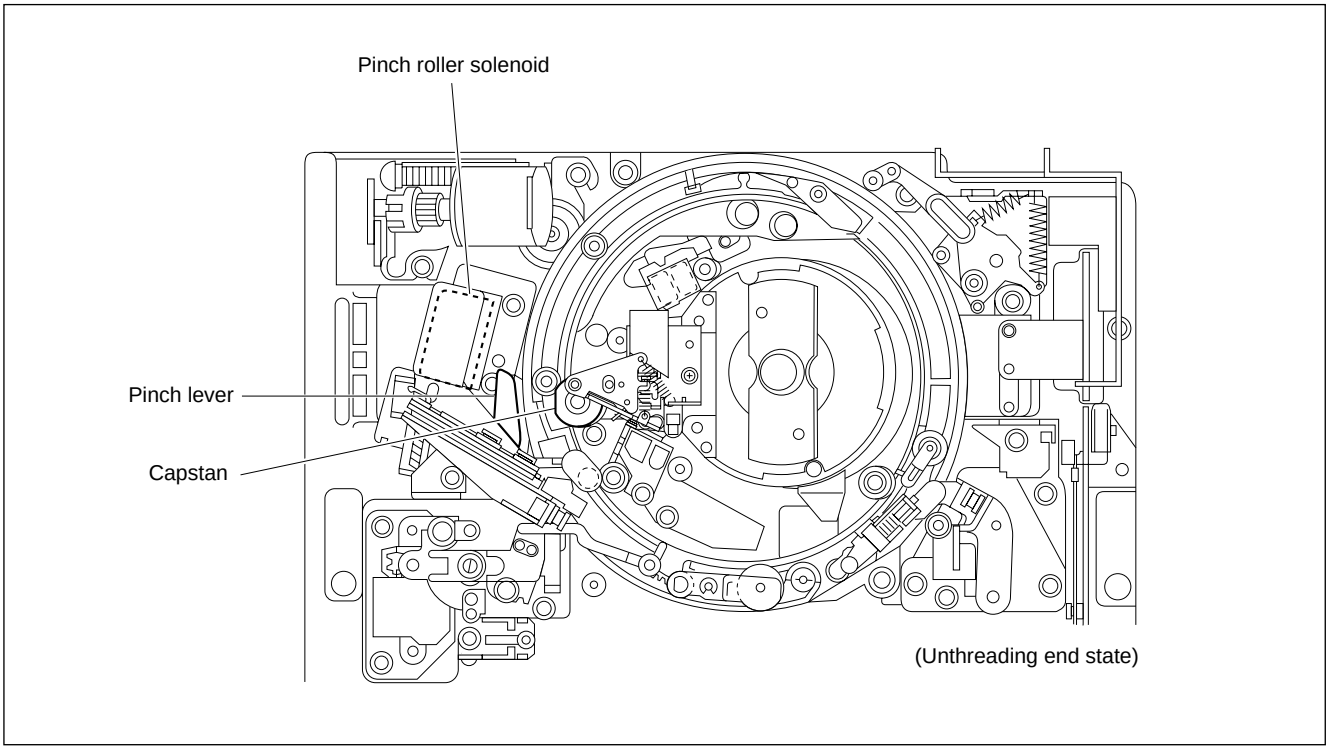
(3) To finish the check, slightly push the pinch lever toward the pinch roller solenoid to return a iron core of the pinch roller solenoid to the former position with a finger.

Note

When rechecking without returning the iron core to the former position, the click sound is not generated even if the pinch roller solenoid is activated.

In case of NG

- Check the mechanical abnormality.
- Check the pinch roller solenoid driver circuit on the DR-315 board.
- Check the pinch roller solenoid itself.



Locations of Pinch Roller Solenoid and Pinch Lever

C021 : S REEL BRAKE
C022 : T REEL BRAKE

These submenus check the function of an S or T reel brake solenoid.

```
SERVO CHECK
 PLUNGER SOLENOID
C021:S REEL BRAKE
```

```
SERVO CHECK
 PLUNGER SOLENOID
C022:T REEL BRAKE
```

Checking

(1) Press the SET button.
- Check a click sound when the reel brake solenoid is activated.

Note

The reel table can be smoothly turned with a hand because the brake is released.

(2) Press the MENU button once to exit the submenu.

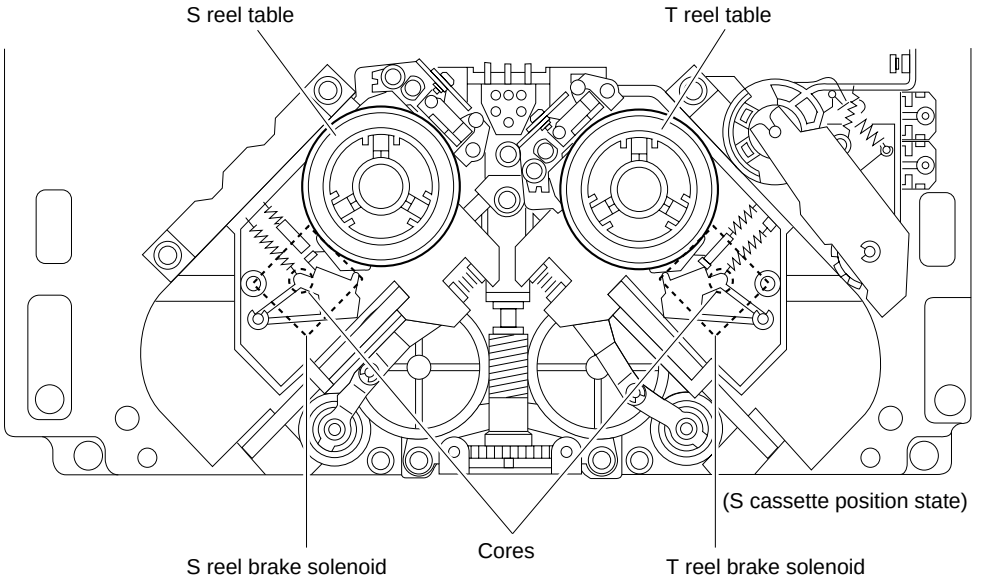
Note

The solenoid is deactivated because its driving voltage is cut off.

(3) Turn the reel table by fingers.
- Check that the brake is applied to the reel table.

In case of NG

- Check the mechanical abnormality.
- Check the reel brake solenoid driver circuit on the DR-315 board.
- Check the reel brake solenoid itself.



Locations of Reel Brake Solenoids

C023 : CLEANING ROLLER

This submenu checks the function of a cleaning roller solenoid.

```
SERVO CHECK
 PLUNGER SOLENOID
C023:CLEANING ROLLER
```

Checking

(1) Press the SET button.
- Check to see that a cleaning roller momentarily touches the drum before releasing it from the drum.

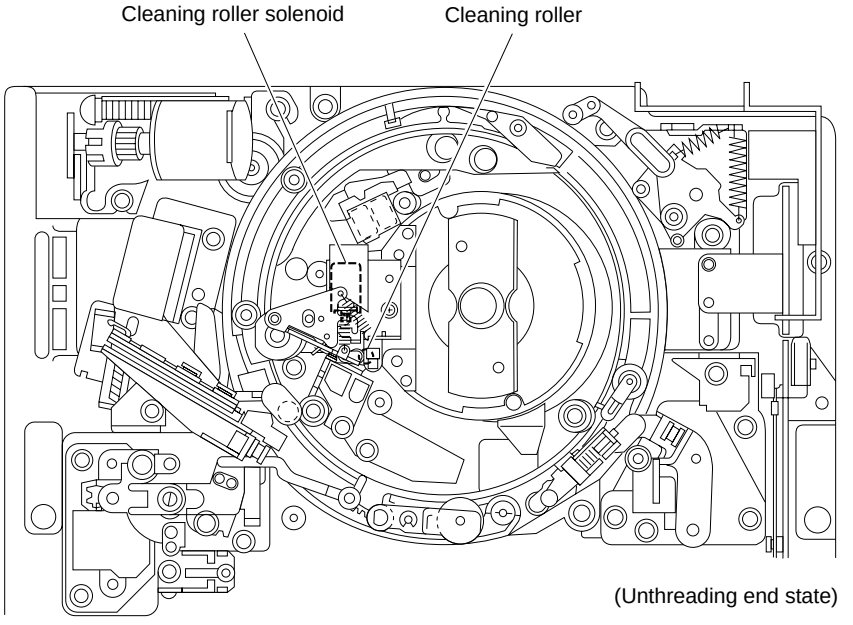
CAUTION

The cleaning roller solenoid causes burning when it remains activating.
If the cleaning roller is not away from the drum, turn off the power immediately.

(2) To finish the check, press the MENU button once.

In case of NG

- Check the mechanical abnormality.
- Check the cleaning roller solenoid driver circuit on the DR-315 board.
- Check the cleaning roller solenoid itself.

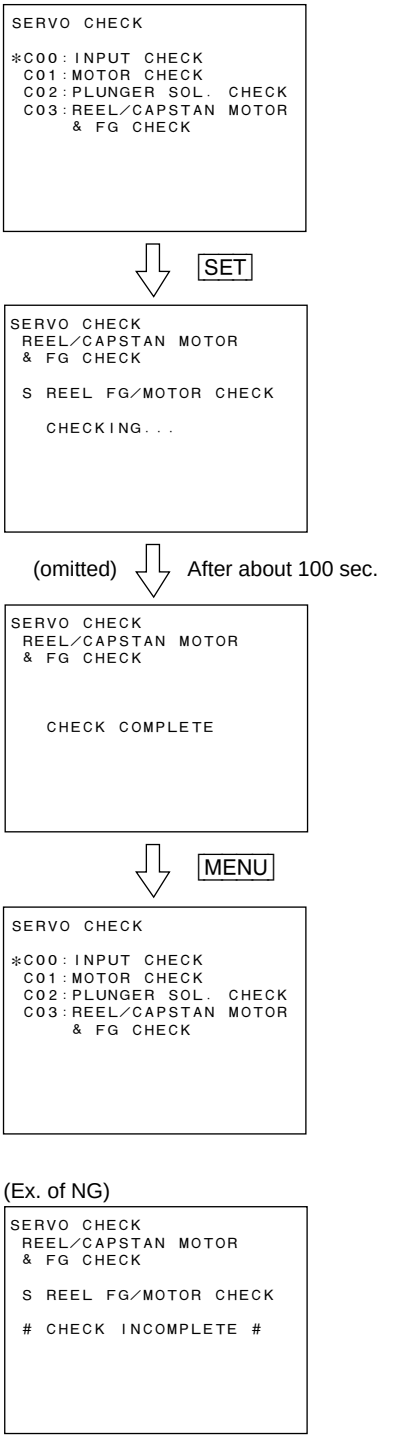


Locations of Cleaning Roller and Cleaning Roller Solenoid

C03 : REEL/CAPSTAN MOTOR & FG CHECK

This menu checks the following items automatically and continuously.

- S reel FG duty ratio (C031 : S REEL FG/MOTOR CHECK)
- T reel FG duty ratio (C032 : T REEL FG/MOTOR CHECK)
- Capstan FG duty ratio (C033 : CAPSTAN FG/MOTOR CHECK)
- S reel offset/friction level (C034 : S REEL OFFSET/FRICTION)
- T reel offset/friction level (C035 : T REEL OFFSET/FRICTION)
- S reel motor torque (C036 : S REEL MOTOR TORQUE)
- T reel motor torque (C037 : T REEL MOTOR TORQUE)



To execute the check

(1) Select C03 in the servo check mode and press the SET button to start the check.
  - During the automatic check, the item name in execution and a message "CHECKING..." will be displayed on the superimposed display. Only the menu number (C031 to C037) will be displayed in the time data display area.

(2) Check to see that all checks are completed and that a message "CHECK COMPLETE" is displayed.
  - If a message "# CHECK INCOMPLETE #" is displayed halfway, refer to the following NG cases during the check.

(3) To return to the selection of the servo check mode, press the MENU button.

In case of NG during (C031) S REEL FG/MOTOR CHECK

Perform the S reel motor check (C010). If no abnormality is found in the motor or its drive circuit, perform the S reel FG duty adjustment (A001).

In case of NG during (C032) T REEL FG/MOTOR CHECK

Perform the T reel motor check (C011). If no abnormality is found in the motor or its drive circuit, perform the T reel FG duty adjustment (A002).

In case of NG during (C033) CAPSTAN FG/MOTOR CHECK

Perform the capstan motor check (C014). If no abnormality is found in the motor or its drive circuit, perform the capstan FG duty adjustment (A003).

In case of NG during (C034) S REEL OFFSET/FRICTION

Perform the S reel motor check (C010). If no abnormality is found in the motor or its drive circuit, perform the S reel offset/friction adjustment (A004).

In case of NG during (C035) T REEL OFFSET/FRICTION

Perform the T reel motor check (C011). If no abnormality is found in the motor or its drive circuit, perform the T reel offset/friction adjustment (A005).

In case of NG during (C036) S REEL MOTOR TORQUE

Perform the S reel motor check (C010). If no abnormality is found in the motor or its drive circuit, perform the S reel torque adjustment (A006).

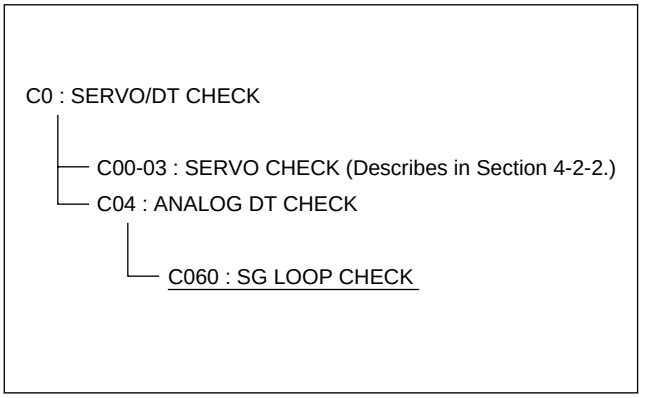
In case of NG during (C037) T REEL MOTOR TORQUE

Perform the T reel motor check (C011). If no abnormality is found in the motor or its drive circuit, perform the T reel torque adjustment (A007).

(Ex. of NG)

4-2-3. ANALOG DT CHECK Mode (C04)

The C04 : ANALOG DT CHECK mode is used to check the analog DT system. The underlined menu in the menu tree below is described next.



Menu Tree of Analog DT System Check Mode

C060 : SG LOOP CHECK

This menu checks the feedback loop of the strain gauge for analog Betacam playback.

To execute the check

(1) Prepare a cassette tape for Betacam or Betacam SP.

Note

The recording content does not matter because this cassette tape is used to enter an analog Betacam playback mode.

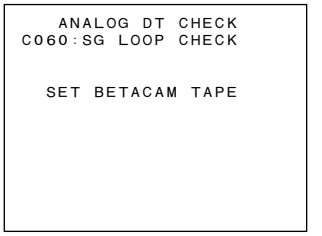
(2) Insert the cassette tape into this unit.

(3) Press the SET button to initiate the automatic check.
- During the automatic check, a message “CHECKING.....” will be displayed on the superimposed display.

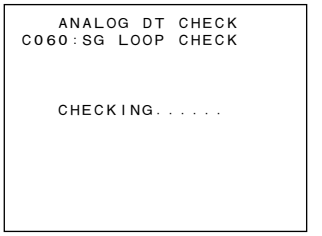
(4) Check the result of checking.
- On completing the automatic check, a message “CHECK COMPLETE” will be displayed.
- If the automatic check fails, a message “# CHECK INCOMPLETE #” is displayed. In this case, refer to “When failing the automatic check” on the right.

(5) To exit the menu, press the MENU button once.
- The cassette tape will automatically be ejected in exiting the menu.

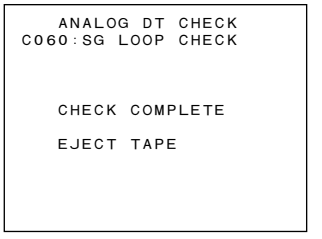
Example of display and operation



(1)(2) ⇩ Insert the cassette tape
(3) ⇩ SET



⇩



(4) ⇩ Check
(5) ⇩ MENU

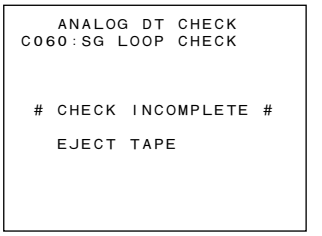
When failing the automatic check

If the message “# CHECK INCOMPLETE #” is displayed during the automatic check, perform the following check.

(1) Check the bimorph driving circuit on the DT-34D board.

(2) Check the bimorph driving circuit on the SS-83 board.

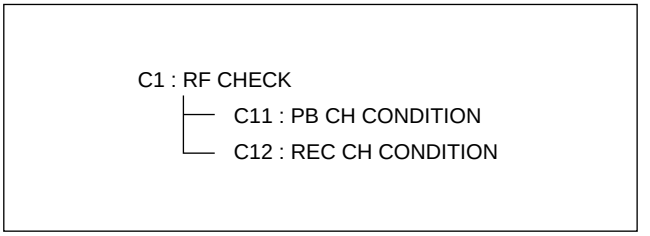
(3) Check the signal transmission system (slip ring etc.).



Ex.: When failing the automatic check

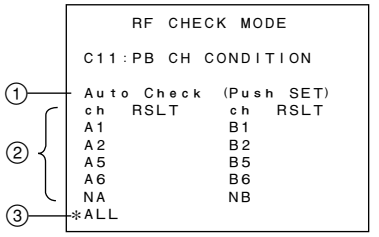
4-2-4. RF CHECK Mode (C1)

The C1 : RF CHECK mode is used to check the PB RF system based on an Betacam SX format.
Two menus are available.



Menu Tree of RF System Check Mode

C11 : PB CH CONDITION



This menu displays the error condition for each channel in three steps (GRN, YEL, and RED) when a tape recorded in Betacam SX format is played back by tracking.
C11 checks using each PB signal from the PB heads (A1, A2, A5, A6, B1, B2, B5, B6, CNFA, and CNFB channels).

Notes

- During normal operation, the tape is played back by non-tracking. Therefore, the condition for each channel cannot be checked using a CH CONDITION indicator.
- If abnormality exists in the servo system, this menu does not function properly.

Description of superimposed display

① The display in this line changes. Each display and its meaning are described below.

Auto Check (Push SET) :	Press the SET button to initiate the check.
Insert SR5-1 :	Insert an alignment tape.
Auto Tracking... :	Tracking is in an optimization process.
Auto Checking... :	Check is in progress.
Auto Check Complete :	Check is completed.
Auto Check Failure :	Check failure
Condition NG :	Error condition defect

② To check the condition for single channel, select a channel name using an ∗ mark.
After the check of the channel is completed, the condition (GRN, YEL, or RED) will be displayed on the right of the channel name.
Even if the check fails, “RED” will be displayed.

Notes

- “RSLT” indicates the result.
- “NA” indicates CNFA.
- “NB” indicates CNFB.

③ To check the conditions for all channels at a time, select “ALL” using the ∗ mark.
During the check, the condition in each channel is displayed in area ②.
After the check for all channels is completed, “GRN” is also displayed on the right of “ALL” when the conditions for all channels are GRN. If there is at least one channel whose condition is YEL or RED, the worst condition is displayed on the right of “ALL”.

To execute the check

(1) Insert the alignment tape SR5-1(for 525/60 system) or SR5-1P (for 625/50 system).

Note

To complete the check, the inserted cassette tape requires the continuous playback-able recorded portion more than a check execution time.
The check execution time is usually about ten seconds in each channel check and about 80 seconds in an ALL check.

(2) Turn the search dial to set the ∗ mark to a channel to be checked or “ALL”.
- Usually, select “ALL”.

(3) Press the SET button to initiate the automatic check.
- The check is initiated after automatically running the tape in the PLAY mode.
- During the check, the message “Auto Tracking ...” or “Auto Checking ...” will be displayed.
  During ALL check execution, the check result in the channel will be displayed every time a one-channel check is completed.
  The time data display area displays an ordinary time counter.
- To cancel the check, press the MENU button once.

Notes

- When no cassette tape is inserted, the message “Insert SR5-1” will be displayed.
  In this case, insert the alignment tape. The check is then initiated after automatically running the tape in the PLAY mode.
- If the message “Auto Check (Push SET)” is continuously displayed, the non-recorded portion on the tape is judged to be check. Set the tape position to the beginning of recorded portion.
- Keep the unit until automatic check is completed. Check cannot be properly performed in other mode than PLAY mode.
  If the unit enters into other mode than PLAY mode, the check freezes or the condition becomes “RED”.

(4) Check to see the result of checking.
- When no abnormality is found, “GRN” will be displayed on the right of the selected channel or “ALL”.
- If the message “Auto Check Failure” is displayed, refer to the “For Check Failure (C11)” on next page.
- If the message “Condition NG” is displayed or if the conditions other than “GRN” are displayed on the right of the checked channel, refer to the “For Condition NG (C11)” on page 4-33.

Notes

- If the check results for all channels are “RED” when displaying the message “Condition NG” in ALL check, refer to the “For Check Failure (C11)”.
- “GRN”, “YEL”, or “RED” is also displayed in the time data display area. In only the time data display area, it cannot be discerned whether the condition is NG or check failure when displaying “RED”.
  The check result for each channel is displayed in the time data display area on turning the search dial after completing ALL check.

(5) To exit the menu, press the MENU button once.
To execute the check again in this menu, go to step (2).

Note

To change the cassette tape before starting the check, press the SET button while pressing the EJECT button.
The tape is then ejected without influencing the check result. Insert another cassette tape and press the PLAY button. The check is then initiated. This operation does not coincide with the message on the superimposed display.

Example of display and operation

When ALL is selected in C11 : PB CH CONDITION.

Superimposed display

```
     RF CHECK MODE

 C11:PB CH CONDITION

 Auto Check  (Push SET)
 ch   RSLT     ch   RSLT
 A1            B1
 A2            B2
 A5            B5
 A6            B6
 NA            NB
*ALL
```

Time data display area

```
C11 -ALL
```

(1) ⇩ Insert SR5-1/SR5-1P
(2) ⇩ Select
(3) ⇩ SET

```
     RF CHECK MODE □

 C11:PB CH CONDITION

 Auto Tracking ...
 ch   RSLT     ch   RSLT
 A1            B1
 A2            B2
 A5            B5
 A6            B6
 NA            NB
*ALL
```

⇩

```
     RF CHECK MODE □

 C11:PB CH CONDITION

 Auto Checking ...
 ch   RSLT     ch   RSLT
 A1            B1
 A2            B2
 A5            B5
 A6            B6
 NA            NB
*ALL
```

⇩

```
     RF CHECK MODE □

 C11:PB CH CONDITION

 Auto Check Complete
 ch   RSLT     ch   RSLT
 A1   GRN      B1
 A2            B2
 A5            B5
 A6            B6
 NA            NB
*ALL
```

⇩

```
     RF CHECK MODE □

 C11:PB CH CONDITION

 Auto Tracking ...
 ch   RSLT     ch   RSLT
 A1   GRN      B1
 A2            B2
 A5            B5
 A6            B6
 NA            NB
*ALL
```

⇩
(omitted)
⇩
(continue)

(continued)
⇩

```
     RF CHECK MODE

 C11:PB CH CONDITION

 Auto Check Complete
 ch   RSLT     ch   RSLT
 A1   GRN      B1   GRN
 A2   GRN      B2   GRN
 A5   GRN      B5   GRN
 A6   GRN      B6   GRN
 NA   GRN      NB   GRN
*ALL GRN
```

```
C11 -ALL GRN
```

(4) ⇩ Check
(5) ⇩ MENU

For Check Failure (C11)

Recheck after changing the portion on the tape.
If no check failure occurs again, a trouble is considered to exist on the tape portion used in the previously check.

Cassette tape check

Check failure occurs if using the tape recorded in otherwise than Betacam SX format or the non-recorded tape. Moreover, check failure will also occur on the tape recorded in the failed Betacam SX VTR. Confirm that the tape can be correctly played back in the other normal operating Betacam SX VTR.

If no trouble is found on the used tape

The possible cause below are considered.

- Heads clogging
  ⇨ Perform steps (1) to (9) of “For Condition NG (C11)” on next page.
- Servo system adjustment defect or circuit defect
  ⇨ Readjust the servo system. (A0 : SERVO ADJUST)
  ⇨ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- Brush/slip ring assembly defect or its part installation/ connection defect
  ⇨ Replace or reinstall the brush/slip ring assembly. (Refer to the maintenance manual part 2, volume-1.)
- Harness (between EQ-75 board and drum assembly) connection defect
- RF system adjustment defect
  ⇨ Readjust the RF system. (A1 : RF ADJUST)
- EQ-75 board defect
- Drum assembly defect

For Condition NG (C11)

Recheck according to the procedures below.

(1) If a check is performed without using alignment tape SR5-1/SR5-1P, recheck in the menu C11 using the alignment tape SR5-1/SR5-1P.
When no abnormality is found, the recheck is completed.

Note

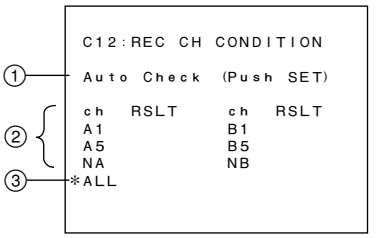
When no abnormality is found during the check using the alignment tape, a trouble (tape is damaged or recording is not done properly) is considered to exist on the tape portion used in the previously check.

(2) Change the playback portion on the alignment tape.
(3) Recheck in the menu C11.
When no abnormality is found, the recheck is completed.
(4) Clean the drum using a cleaning tape according to Section 5-2-1.
(5) Recheck in the menu C11 using the alignment tape.
When no abnormality is found, the recheck is completed.
(6) Clean the drum using the cleaning tape again (the amount of the tape used is 15 seconds)
(7) Recheck in the menu C11 using the alignment tape.
When no abnormality is found, the recheck is completed.
(8) Clean the drum (video heads) with a cleaning cloth according to Sections 5-2-2 and 5-2-3
(9) Recheck in the menu C11 using the alignment tape.
When no abnormality is found, the recheck is completed.

If the error condition is not improved in the way mentioned above, the possible cause below are considered.

- Servo system adjustment defect or circuit defect
  ⇨ Readjust the servo system. (A00-01 : SERVO ADJUST)
  ⇨ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- RF system adjustment defect
  ⇨ Readjust the RF system. (A1 : RF ADJUST)
- Worn PB head in the drum assembly
  ⇨ After checking the hours meter (H02 : DRUM RUNNING HOURS), replace the upper drum assembly as required.
  (Refer to the maintenance manual part 2, volume-1.)
- In the tape transport system, adjustment defect or component part installation defect
  ⇨ Readjust the tape transport system or reinstall the part.
  (Refer to the maintenance manual part 2, volume-1.)
- EQ-75 board defect
- Drum assembly defect

C12 : REC CH CONDITION



This menu displays the error condition for each channel in three steps (GRN, YEL, and RED) when recording on the tape recorded in Betacam SX format in the insert REC and crash REC modes.
In the insert REC mode, checks using each PB signal from the advance PB heads (A1, A5, B1, and B5) by tracking.
In the crash REC mode, checks using each PB signal from the confidence PB heads (CNFA and CNFB).

Notes

- During normal operation, the tape is played back by non-tracking. Therefore, the condition for each channel cannot be checked using a CH CONDITION indicator.
- If abnormality exists in the servo system, this menu does not function properly.

Description of superimposed display

① The display in this line changes. Each display and its meaning are described below.

Auto Check (Push SET) :	Press the SET button to initiate the check.
Insert Check Tape :	Insert a tape for check.
Auto Tracking... :	Tracking is in an optimization process.
Auto Checking... :	Check is in progress.
Auto Check Complete :	Check is completed.
Auto Check Failure :	Check failure
Condition NG :	Error condition defect

② To check the condition for single channel, select a channel name using an ∗ mark.
After the check of the channel is completed, the condition (GRN, YEL, or RED) will be displayed on the right of the channel name.
Even if the check fails, “RED” will be displayed.

Notes

- “RSLT” indicates the result.
- “NA” indicates CNFA.
- “NB” indicates CNFB.

③ To check the conditions for all channels, select “ALL” using the ∗ mark.
During the check, the condition in each channel is displayed in area ②.
After the check for all channels is completed, “GRN” is also displayed on the right of “ALL” when the conditions for all channels are GRN. If there is at least one channel whose condition is YEL or RED, the worst condition is displayed on the right of “ALL”.

http://getMANUAL.com

To execute the check

(1) Insert a record-able cassette tape recorded in Betacam SX format.

Notes

- To complete the check, the inserted cassette tape requires the continuous playback-able recorded portion than two minutes. Before check, record any video signal on blank tape for two minutes or more.
- The recorded data on the inserted cassette tape will be rewritten to another data in this check.
- The check execution time for each channel is usually about ten seconds and about 80 seconds in an ALL check.

(2) Turn the search dial to set the ∗ mark to a channel to be checked or “ALL”.

- Usually, select “ALL”.

(3) Press the SET button to initiate the automatic check.

- The check is initiated after automatically running the tape in the REC mode.
- During the check, the message “Auto Tracking ...” or “Auto Checking ...” will be displayed.
  During ALL check execution, the check result in the channel will be displayed every time a one-channel check is completed.
  The time data display area displays an ordinary time counter.
- To cancel the check, press the MENU button once.

Notes

- When no cassette tape is inserted, the message “Insert Check Tape” will be displayed.
  In this case, insert the record-able cassette tape with recorded for two minutes or more. The check is then initiated after automatically running the tape in the REC mode.
- If the message “Auto Check (Push SET)” is continuously displayed, the non-recorded portion on the tape is judged to be check. Set the tape position to the beginning of recorded portion.
- Keep the unit until automatic check is completed. Check cannot be properly performed in other mode than REC mode.
  If the unit enters into other mode than REC mode, the check freezes or the condition becomes “RED”.

(4) Check the result of checking.

- When no abnormality is found, “GRN” will be displayed on the right of the selected channel or “ALL”.
- If the message “Auto Check Failure” is displayed, refer to the “For Check Failure (C12)” on next page.
- If the message “Condition NG” is displayed or if the conditions other than “GRN” are displayed on the right of the checked channel, refer to the “For Condition NG (C12)” on page 4-37.

Notes

- If the check results for all channels are RED when displaying the message “Condition NG” in ALL check, refer to the “For Check Failure (C12)”.
- “GRN”, “YEL”, or “RED” is also displayed in the time data display area. In only the time data display area, it cannot be discerned whether the condition is NG or check failure when displaying “RED”.
  The check result for each channel is displayed in the time data display area on turning the search dial after completing ALL check.

(5) To exit the menu, press the MENU button once.
To execute the check again in this menu, go to step (2).

Note

To change the cassette tape before starting the check, press the SET button while pressing the EJECT button.
The tape is then ejected without influencing the check result. Insert another cassette tape and press the PLAY button. The check is then initiated. This operation does not coincide with the message on the superimposed display.

Example of display and operation

When ALL is selected in C12 : REC CH CONDITION.

Superimposed display

```
C12:REC CH CONDITION

Auto Check (Push SET)

ch  RSLT    ch  RSLT
A1          B1
A5          B5
NA          NB
*ALL
```

Time data display area

```
C12-ALL
```

(1) ⇩ Insert SR5-1/SR5-1P
(2) ⇩ Select
(3) ⇩ SET

```
C12:REC CH CONDITION

Auto Tracking ...

ch  RSLT    ch  RSLT
A1          B1
A5          B5
NA          NB
*ALL
```

⇩

```
C12:REC CH CONDITION

Auto Checking ...

ch  RSLT    ch  RSLT
A1          B1
A5          B5
NA          NB
*ALL
```

⇩

```
C12:REC CH CONDITION

Auto Check Complete

ch  RSLT    ch  RSLT
A1  GRN     B1
A5          B5
NA          NB
*ALL
```

⇩

```
C12:REC CH CONDITION

Auto Tracking ...

ch  RSLT    ch  RSLT
A1  GRN     B1
A5          B5
NA          NB
*ALL
```

⇩
(omitted)
⇩
(continue)

(continued)
⇩

```
C12:REC CH CONDITION

Auto Check Complete

ch  RSLT    ch  RSLT
A1  GRN     B1  GRN
A5  GRN     B5  GRN
NA  GRN     NB  GRN
*ALL GRN
```

```
C12-ALL GRN
```

(4) ⇩ Check
(5) ⇩ MENU

For Check Failure (C12)

Recheck after changing the portion on the tape.
If no check failure occurs again, a trouble is considered to exist on the tape portion used in the previously check.

Cassette tape check

Check failure occurs if using the tape recorded in otherwise than Betacam SX format or the non-recorded tape. Moreover, check failure will also occur on the tape recorded in the failed Betacam SX VTR. Confirm that the tape can be correctly played back in the other normal operating Betacam SX VTR.

If no trouble is found on the used tape

The possible cause below are considered.

- Heads clogging
  ⇨ Perform steps (1) to (9) of “For Condition NG (C12)” on next page.
- Servo system adjustment defect or circuit defect
  ⇨ Readjust the servo system. (A0 : SERVO ADJUST)
  ⇨ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- Brush slip ring assembly defect or its part installation/ connection defect
  ⇨ Replace or reinstall the brush slip ring assembly. (Refer to the maintenance manual part 2, volume-1.)
- Harness (between EQ-75 board and drum assembly) connection defect
- RF system adjustment defect
  ⇨ Readjust the RF system. (A1 : RF ADJUST)
- EQ-75 board defect
- Drum assembly defect

For Condition NG (C12)

Check and recheck according to the procedures below.

Note

The recorded data on the tape will be overwritten in checking in the menu C12. Before the recheck, record any video signal again on the tape for two minute or more.

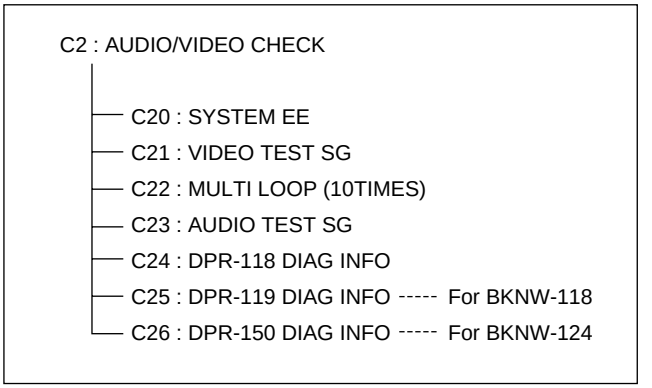
(1) Check in C11 : PB CH CONDITION with alignment tape. When the result is OK, perform (2) and later.
(2) Adjust the recording current in A12 : REC CURRENT.
(3) Recheck in the menu C12 after recording any video signal again for two minutes or more.
When no abnormality is found, the recheck is completed.
(4) Clean the drum using a cleaning tape according to Section 5-2-1.
(5) Recheck in the menu C12 after re-recording any video signal on the tape for two minutes or more.
When no abnormality is found, the recheck is completed.
(6) Clean the drum using the cleaning tape again (the amount of the tape used is 15 seconds).
(7) Recheck in the menu C12 after re-recording any video signal on the tape for two minutes or more.
When no abnormality is found, the recheck is completed.
(8) Clean the drum (video heads) with a cleaning cloth according to Sections 5-2-2 and 5-2-3.
(9) Recheck in the menu C12 after re-recording any video signal on the tape for two minutes or more.
When no abnormality is found, the recheck is completed.

If the error condition is not improved in the way mentioned above, the possible cause below are considered.

- Servo system adjustment defect or circuit defect
  ⇨ Readjust the servo system. (A00-01 : SERVO ADJUST)
  ⇨ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- Worn PB head in the drum assembly
  ⇨ After checking the hours meter (H02 : DRUM RUNNING HOURS), replace the upper drum assembly as required.
  (Refer to the maintenance manual part 2, volume-1.)
- In the tape transport system, adjustment defect or component part installation defect
  ⇨ Readjust the tape transport system or reinstall the part.
  (Refer to the maintenance manual part 2, volume-1.)
- EQ-75 board defect
- Drum assembly defect

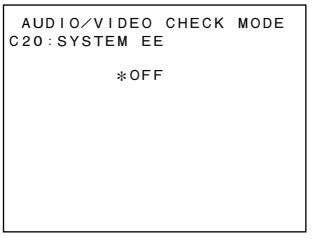
4-2-5. AUDIO/VIDEO CHECK Mode (C2)

The C2 : AUDIO/VIDEO CHECK mode has seven menus (including the menu displayed when the option is installed) that are useful for checking audio and video systems.


C2 : AUDIO/VIDEO CHECK
C20 : SYSTEM EE
C21 : VIDEO TEST SG
C22 : MULTI LOOP (10TIMES)
C23 : AUDIO TEST SG
C24 : DPR-118 DIAG INFO
C25 : DPR-119 DIAG INFO ----- For BKNW-118
C26 : DPR-150 DIAG INFO ----- For BKNW-124

Menu Tree of Audio/Video Systems Check Mode

C20 : SYSTEM EE



This menu selects the system E-E function to be enabled or disable in the maintenance mode, and additionally selects a signal path from among the followings when the system E-E function is enabled.

OFF: Normal state (in which the system E-E state is not entered)
ECC-EE: Reflects the signal after it passes through IC402 (ECC encoder) on the DPR-118 board.
RF-EE: Reflects a signal in the EQ-75 board.

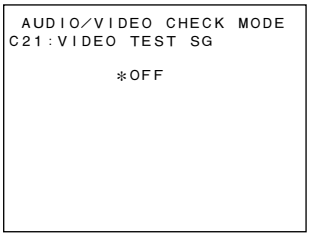
System E-E setting

To set the system E-E function, turn the search dial while pressing the JOG button and display the desired setting. The specified setting is maintained until the maintenance mode is terminated or the setting is changed.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- Be sure to perform under the no cassette tape state when selecting the system E-E to enable.

C21 : VIDEO TEST SG



This menu selects the operation in the maintenance mode of a video test signal generator incorporated into this unit.

OFF: The video test signal generator operation stops.

Except OFF: A video test signal generator outputs the selected signals (below).

100% color bars	75% color bars
75% reverse color bars	
Bowtie	Pulse and bar
Multi-burst	H sweep
5-step	Ramp
Shallow ramp	Red signal
50% flat	100% flat
Black burst	
Pathological check code	
NTC7 (NTSC) ⇦ Only for 525/60 system	
Line330 (625) ⇦ Only for 625/50 system	

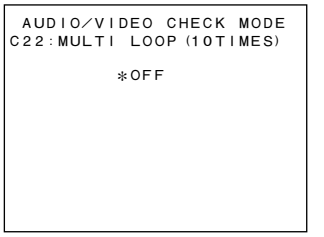
Setting of video test signal generator

To set the video test signal generator, turn the search dial while pressing the JOG button and display the desired setting.
This setting is valid until the maintenance mode is terminated. However, C21 : VIDEO TEST SG setting is reset to OFF when C22 : MULTI LOOP (10TIMES) setting is changed.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- The output signal of a test signal generator can also be recorded on the tape. In this case, press the SET button to display the white square in the upper-right position of the superimposed display, before recording.

C22 : MULTI LOOP (10TIMES)



This menu selects the multi-loop function enabled or disabled in the maintenance mode, and additionally selects a video test signal when the multi-loop function is enabled. The video test signal that can be selected is output from an internal video test signal generator. The video test signal is the same in type as one described in C21 : VIDEO TEST SG menu.

OFF: Normal state (in which no multi-loop operation is performed)

Except OFF: The selected signal is output from a video test signal generator for multi-loop operation.

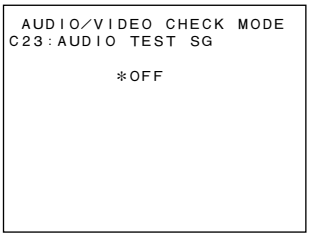
Multi-loop function setting

To set the multi-loop function, turn the search dial while pressing the JOG button and display the desired setting. This setting is valid until the maintenance mode is terminated. However, C22 : MULTI LOOP (10TIMES) setting is reset to OFF when C21 : VIDEO TEST SG setting is changed.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- The output signal during multi-loop operation can also be recorded on the tape. In this case, press the SET button to display the white square in the upper-right position of the superimposed display, before recording.

C23 : AUDIO TEST SG



This menu selects the operation in the maintenance mode of an audio test signal generator incorporated in this unit.

OFF: The audio test signal generator operation stops.

Except OFF: An audio test signal generator outputs the selected signals (below).
Silence
1 kHz sine 0 VU
1 kHz sine burst/1 field
1 kHz sine burst/2 field
1 kHz sine burst/5 field
1 kHz sine burst/8 field
1 kHz sine burst(10)
4 kHz sine burst(40)
Saw wave

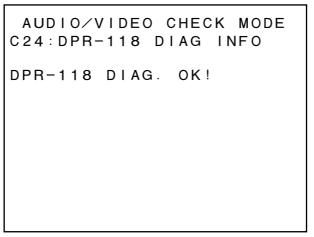
Setting of audio test signal generator

To set the audio test signal generator, turn the search dial while pressing the JOG button and display the desired setting.
This setting is valid until the maintenance mode is terminated.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- The output signal of a test signal generator can also be recorded on the tape. In this case, press the SET button to display the white square in the upper-right position of the superimposed display, before recording.

C24 : DPR-118 DIAG INFO



This function informs the result of the self-diagnosis of the DPR-118 board in this unit.
When a failure occurs on the DPR-118 board, this function guess the default IC but do not specified.

Note

"ERROR" may be displayed as the diagnosis result even if the boards except DPR-118 are defective.

An initialize check and something check are available as the self-diagnosis function.

- In the initialize check, check the communication of the communication bus (PAD0-7, STAT0-1, STRB, and CS) between SY2 CPU on the SS-83 board and each IC on the DPR-118 board.
  Initialization data is transferred from SY2 CPU to each IC. After that, the initialization data set in each IC is read and compared with the initialization data transferred at first.
- In the something check, a parity check and external memory check are performed for the input signals of the following ICs, and the result of the self-diagnosis of each IC is displayed by reading from SY2 CPU.

Target IC for the diagnosis

No.	Screen display	Target IC Ref. No. (IC name)
1, 11	F-CONT	IC251 (CXD8997R)
2, 12	DIGI FIL	IC209 (CXD9025R)
3, 13	SX ENC	IC200 (CXD8973BR)
4, 14	SX MEP	IC300 (CXD8974AR)
5, 15	ECC ENC	IC402 (CXD8946Q)
6, 16	OUTER	IC600 (CXD8945BR)
7, 17	SX DEC	IC800 (CXD9012AR)

To display the self-diagnosis function result

(1) Select the C24 : DPR-118 DIAG INFO menu.
(2) To scroll the screen, turn the JOG dial.
  Downward: Turn it in REVERSE (↺) direction.
  Upward: Turn it in FORWARD (↻) direction.
(3) Press the MENU button to terminate the menu after checking the self-diagnosis result.

Screen display samples

In case of normal

```
 AUDIO/VIDEO CHECK MODE
C24:DPR-118 DIAG INFO

DPR-118 DIAG. OK!

 INITIALIZE CHECK..
  1.F-CONT    INIT.     OK
  2.DIGI FIL  INIT.     OK
  3.SX ENC    INIT.     OK
  4.SX MEP    INIT.     OK
  5.ECC ENC   INIT.     OK
  6.OUTER     INIT.     OK
  7.SX DEC    INIT.     OK

 SOMETHING CHECK..
 11.F-CONT    CHECK.    OK
 12.DIGI FIL  CHECK.    OK
 13.SX ENC    CHECK.    OK
 14.SX MEP    CHECK.    OK
 15.ECC ENC   CHECK.    OK
 16.OUTER     CHECK.    OK
 17.SX DEC    CHECK.    OK
```

In case of abnormal

```
 AUDIO/VIDEO CHECK MODE
C24:DPR-118 DIAG INFO

DPR-118 DIAG.ERROR!

 INITIALIZE CHECK..
  1.F-CONT    INIT.     OK
  2.DIGI FIL  INIT.     OK
  3.SX ENC    INIT.     NG
  4.SX MEP    INIT.     OK
  5.ECC ENC   INIT.     OK
  6.OUTER     INIT.     OK
  7.SX DEC    INIT.     OK

 SOMETHING CHECK..
 11.F-CONT    CHECK.    NG
      PARITY ERR B-IN
      PARITY ERR A-IN
 12.DIGI FIL  CHECK.    OK
 13.SX ENC    CHECK.    NG
      PARITY ERR MEP
 14.SX MEP    CHECK.    OK
 15.ECC ENC   CHECK.    OK
 16.OUTER     CHECK.    OK
 17.SX DEC    CHECK.    OK
```

Displays NG for failure item.

In case of NG,
the detail data is displayed.

Detail description of abnormal case

INITIALIZE CHECK:

The possible cause below is judged as an NG item.

- The target IC is defective.
- The foiled pattern on the board connecting target IC and SY2 CPU is defective.
- The component part between target IC and SY2 CPU is defective.

INITIALIZE CHECK Screen display	Target IC	Target IC's pin number connected to SY2 CPU
1. F-CONT INIT. NG	IC251	Pins 109 to 116, 118 to 121
2. DIGI FIL INIT. NG	IC209	Pins 113 to 116, 118 to 125
3. SX ENC INIT. NG	IC200	Pins 128, 133 to 135, 141 to 144, 146 to 149
4. SX MEP INIT. NG	IC300	Pins 128, 133, 134, 141 to 144, 146 to 149
5. ECC ENC INIT. NG	IC402	Pins 45, 49 to 59
6. OUTER INIT. NG	IC600	Pins 9 to 16, 20 to 23
7. SX DEC INIT. NG	IC800	Pins 44 to 7, 53 to 59, 62

SOMETHING CHECK:

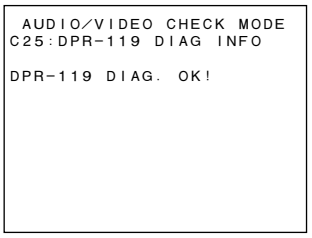
The possible cause below is judged as an ERR item.

- The target IC is defective.
- The foiled pattern on the board connecting target IC and its connected IC is defective.
- The component part between target IC and its connected IC is defective.
- Connected IC is defective.

SOMETHING CHECK Screen display	Target IC (Its pin number) [Ref. No. of Connected IC]
11. F-CONT CHECK. NG	
PARITY ERR B-IN	IC251 (Pins 94 to 101, 103 to 106)
PARITY ERR A-IN	IC251 (Pins 74 to 80, 82 to 88), [IC800]
12. DIGI FIL CHECK. NG	
PARITY ERR A-IN	IC209 (Pins 3 to 8, 10 to 17), [IC251]
13. SX ENC CHECK. NG	
PARITY ERR MEP	IC200 (Pins 165, 168 to 173, 175 to 179, 182 to 186, 189 to 192, 195 to 199), [IC300]
PARITY ERR VIDEO	IC200 (Pins 88, 89, 92 to 101, 105, 106), [IC209]
CLOCK ERR 13.5M CLOCK ERR 27M CLOCK ERR 54M CLOCK ERR 81M	IC200 (Pins 110 to 113, 116, 121 to 127)
SDRAM ERR ALL **Note** Displays "ALL" wherever an abnormal point occurs.	IC200, [IC205 to IC208]
14. SX MEP CHECK. NG	
SDRAM ERR ALL **Note** Displays "ALL" wherever an abnormal point occurs.	IC300, [IC205 to IC208]
INPUT ERR PARITY	IC300 (Pins 238 to 241, 244 to 247, 250, 251), [IC200]
INPUT ERR SYNC	IC300 (Pin 238), [IC200]
CLOCK ERR 81M CLOCK ERR 54M CLOCK ERR 27M CLOCK ERR 13.5M PLL ERR 81M PLL ERR 54M PLL ERR 27M	IC300 (Pins 107, 111 to 113, 116, 121 to 127)

SOMETHING CHECK Screen display	Target IC (Its pin number) [Ref. No. of Connected IC]
15. ECC ENC CHECK. NG	
MACRO SEQ ERR EXT FIFO FULL WARN PACK2 NOT FIN ERR	IC402 (Data is abnormal)
SDRAM ERR	IC402, [IC403]
EXT FIFO ERR B	IC402, [IC401]
EXT FIFO ERR A	IC402, [IC400]
PARITY ERR SX-IN	IC402 (Pins 60 to 69), [IC200]
PARITY ERR AUD-0	IC402 (Pin 140)
PARITY ERR AUD-1	IC402 (Pin 141)
16. OUTER CHECK. NG	
PARITY ERR xx **Note** On “xx displays the number of the input parity errors.	IC600 (Pins 49, 50, 57 to 59, 62 to 66)
SDRAM ERR NT	IC600, [IC603]
SDRAM ERR JOG	IC600, [IC601, IC602]
17. SX DEC CHECK. NG	
SDRAM ERR ALL **Note** Displays “ALL” wherever an abnormal point occurs.	IC800, [IC801, IC802]
PARITY ERR MEP	IC800 (Internal connection of IC800)
PARITY ERR STREAM	IC800 (Pins 88 to 95, 98, 112)
CLOCK ERR 13.5M CLOCK ERR 27M CLOCK ERR 54M CLOCK ERR 81M	IC800 (Pins 99, 120 to 124, 127 to 132)

C25 : DPR-119 DIAG INFO



This function informs the result of the self-diagnosis of the DPR-119 board of BKNW-118. It is displayed when the BKNW-118 option is installed.
When a failure occurs on the DPR-119 board, this function guess the default IC but do not specified.

Note

“ERROR” may be displayed as the diagnosis result even if the boards except DPR-119 are defective.

An initialize check and something check are available as the self-diagnosis function.

- In the initialize check, check the communication of the communication bus (PAD0-7, STAT0-1, STRB, and CS) between SY2 CPU on the SS-83 board and IC213 or IC216 on the DPR-119 board.
  Initialization data is transferred from SY2 CPU to each IC. After that, the initialization data set in each IC is read and compared with the initialization data transferred at first.
- In the something check, a parity check and FIFO memory check are performed for the input signals of IC200, and the result of the self-diagnosis of IC200 is displayed by reading from SY2 CPU on the SS-83 board.

Target IC for the diagnosis

No.	Screen display	Target IC Ref. No. (IC name)	Remarks
1	SDTI TX	IC213 (CXD8969AR)	Initialize check only
2	AU FEED	IC106 (CXD211-124Q)	Initialize check only
13	V-PACK	IC200 (CXD8977R)	Something check only

To display the self-diagnosis function result

(1) Select the C25 : DPR-119 DIAG INFO menu.
(2) To scroll the screen, turn the JOG dial.
  Downward: Turn it in REVERSE (↺) direction.
  Upward: Turn it in FORWARD (↻) direction.
(3) Press the MENU button to terminate the menu after checking the self-diagnosis result.

Screen display samples

In case of normal

```
 AUDIO/VIDEO CHECK MODE
C25:DPR-119 DIAG INFO

DPR-119 DIAG. OK!

 INITIALIZE CHECK..
  1.SDTI TX   INIT.     OK
  2.AU FEED   INIT.     OK

 SOMETHING CHECK..
 13.V-PACK    CHECK.    OK
```

In case of abnormal

```
 AUDIO/VIDEO CHECK MODE
C25:DPR-119 DIAG INFO

DPR-119 DIAG. ERROR!

 INITIALIZE CHECK..
  1.SDTI TX   INIT.     OK   } Displays NG for failure item.
  2.AU FEED   INIT.     OK   }

 SOMETHING CHECK..
 13.V-PACK    CHECK.    NG   }
     LAST  BYTE    ERR 1     } In case of NG,
     FRAME TOP     ERR 1     } the detail data is displayed.
     GOP   TOP     ERR 1     }
     FIFO  PARITY  ERR 1     }
     INPUT PARITY  ERR 1     }
```

Detail description of abnormal case

INITIALIZE CHECK:
The possible cause below is judged as an NG item.

- The target IC is defective.
- The foiled pattern on the board connecting target IC and SY2 CPU is defective.
- The component part between target IC and SY2 CPU is defective.

INITIALIZE CHECK Screen display	Target IC	Target IC's pin number connected to SY2 CPU
1. SDTI TX	IC213	Pins 5 to 14, 16, and 17
2. AU FEED	IC106	Pins 42 to 49 and 51 to 54

SOMETHING CHECK (13. V-PACK CHECK NG):
The possible cause below is judged as an ERR item.

- IC200 is defective.
- The foiled pattern on the board connecting IC200 and its connected IC is defective. (at parity error only)
- The component part between IC200 and its connected IC is defective. (at parity error only)
- Connected IC is defective. (at parity error only)

Parity error	Ref. No. of IC connected to IC200
FIFO PARITY ERR	IC204, IC205, IC208, and IC209
INPUT PARITY ERR	IC1100 and IC1101 on DPR-118 board

C26 : DPR-150 DIAG INFO

```
 AUDIO/VIDEO CHECK MODE
C26:DPR-150 DIAG INFO

DPR-150 DIAG. OK!
```

This function informs the result of the self-diagnosis of the DPR-150 board of BKNW-124. It is displayed when the BKNW-124 option is installed.
When a failure occurs on the DPR-150 board, this function guess the default IC but do not specified.

Note

"ERROR" may be displayed as the diagnosis result even if the boards except DPR-150 are defective.

An initial-verify and others check are available as the self-diagnosis function.

- In the initial-verify, check the communication of the communication bus (PAD0-7, STAT0-1, STRB, and CS) between SY3 CPU and each IC on the DPR-150 board. Initialization data is transferred from SY3 CPU to each IC. After that, the initialization data set in each IC is read and compared with the initialization data transferred at first.
- In the others check, a parity check and external memory check are performed for the input signals of the following ICs, and the result of the self-diagnosis of each IC is displayed by reading from SY3 CPU.

Target IC for the diagnosis

No.	Screen display	Target IC Ref. No. (IC name)	Remarks
1, 11	SX DEC 0	IC300 (CXD9012AR)	
2, 12	SX DEC 1	IC400 (CXD9012AR)	
3, 13	SX DEC 2	IC500 (CXD9012AR)	
4, 14	SX ENC 0	IC700 (CXD8973BR)	
5, 15	SX ENC 1	IC900 (CXD8973BR)	
6, 16	SX MEP	IC800 (CXD8974AR)	
7	SX MPEG0	IC702 (CXD9077BR)	Initial-verify only
8	SX MPEG1	IC906 (CXD9077BR)	Initial-verify only
9	SX MPEG2	IC606 (CXD9077BR)	Initial-verify only
a, 1a	DIGI FIL	IC603 (CXD9025R)	
b	SDTI CP	IC30* (CXD9139GF)	Initial-verify only
c	MSP MOE	IC1000 (XC4036XLA)	Initial-verify only

*: When the DPR-150 board's board number suffix is -11, this IC CXD9139GF is IC300 on the piggybacked DIF-109 board on to the DPR-150 board.

To display the self-diagnosis function result

(1) Select the C26 : DPR-150 DIAG INFO menu.
(2) To scroll the screen, turn the JOG dial.
Downward: Turn it in REVERSE (↺) direction.
Upward: Turn it in FORWARD (↻) direction.
(3) Press the MENU button to terminate the menu after checking the self-diagnosis result.

Screen display samples

In case of normal

```
 AUDIO/VIDEO CHECK MODE
C26:DPR-150 DIAG INFO

DPR-150 DIAG. OK!

 INITIAL VERIFY..
  1.SX DEC 0 INIT.     OK
  2.SX DEC 1 INIT.     OK
  3.SX DEC 2 INIT.     OK
  4.SX ENC 0 INIT.     OK
  5.SX ENC 1 INIT.     OK
  6.SX MEP   INIT.     OK
  7.SX MPEG0 INIT.     OK
  8.SX MPEG1 INIT.     OK
  9.SX MPEG2 INIT.     OK
  a.DIGI FIL INIT.     OK
  b.SDTI CP  INIT.     OK
  c.MSP MOE  INIT.     OK

 OTHERS CHECK..
 11.SX DEC 0 CHECK.    OK
 12.SX DEC 1 CHECK.    OK
 13.SX DEC 2 CHECK.    OK
 14.SX ENC 0 CHECK.    OK
 15.SX ENC 1 CHECK.    OK
 16.SX MEP   CHECK.    OK
 1a.DIGI FIL CHECK.    OK
```

In case of abnormal

```
 AUDIO/VIDEO CHECK MODE
C26:DPR-150 DIAG INFO

DPR-150 DIAG. ERROR!

 INITIAL VERIFY..
  1.SX DEC 0 INIT.     OK
  2.SX DEC 1 INIT.     OK
  3.SX DEC 2 INIT.     OK
  4.SX ENC 0 INIT.     OK
  5.SX ENC 1 INIT.     NG
  6.SX MEP   INIT.     OK
  7.SX MPEG0 INIT.     OK
  8.SX MPEG1 INIT.     OK
  9.SX MPEG2 INIT.     OK
  a.DIGI FIL INIT.     OK
  b.SDTI CP  INIT.     NG
  c.MSP MOE  INIT.     OK

 OTHERS CHECK..
 11.SX DEC 0 CHECK.    NG
     PARITY ERR   STREAM
 12.SX DEC 1 CHECK.    NG
     PARITY ERR   STREAM
 13.SX DEC 2 CHECK.    NG
     PARITY ERR   STREAM
 14.SX ENC 0 CHECK.    OK
 15.SX ENC 1 CHECK.    OK
 16.SX MEP   CHECK.    OK
 1a.DIGI FIL CHECK.    OK
```

Displays NG for failure item.

In case of NG, the detail data is displayed.

Detail description of abnormal case

INITIAL VERIFY:

The possible cause below is judged as an NG item.

- The target IC is defective.
- The foiled pattern on the board connecting target IC and SY3 CPU is defective.
- The component part between target IC and SY3 CPU is defective.

INITIAL VERIFY Screen display	Target IC	Target IC's pin number connected to SY3 CPU
1. SX DEC 0 INIT. NG	IC300	Pins 44 to 47, 53 to 59, 62
2. SX DEC 1 INIT. NG	IC400	Pins 44 to 47, 53 to 59, 62
3. SX DEC 2 INIT. NG	IC500	Pins 44 to 47, 53 to 59, 62
4. SX ENC 0 INIT. NG	IC700	Pins 128, 133 to 135, 141 to 144, 146 to 149
5. SX ENC 1 INIT. NG	IC900	Pins 128, 133 to 135, 141 to 144, 146 to 149
6. SX MEP INIT. NG	IC800	Pins 128, 134, 135, 141 to 144, 146 to 149
7. SX MPEG0 INIT. NG	IC702	Pins 122 to 125, 128 to 131, 139 to 142
8. SX MPEG1 INIT. NG	IC906	Pins 122 to 125, 128 to 131, 139 to 142
9. SX MPEG2 INIT. NG	IC606	Pins 122 to 125, 128 to 131, 139 to 142
a. DIGI FIL INIT. NG	IC603	Pins 113 to 116, 118 to 125
b. SDTI CP INIT. NG	IC30*	Pins 13, 14, 21, 111 to 113, 115, 120, 202 to 204, 288
c. MSP MOE INIT. NG	IC1000	Pins 124, 145 to 147, 154 to 157, 160, 162 to 164

*: When the DPR-150 board's board number suffix is -11, this IC CXD9139GF is IC300 on the piggybacked DIF-109 board on to the DPR-150 board.

OTHERS CHECK:

The possible cause below is judged as an ERR item.

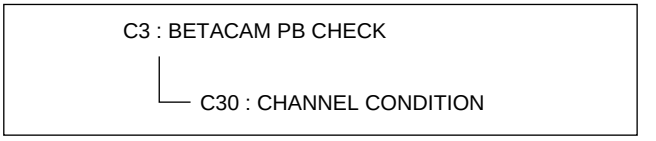
- The target IC is defective.
- The foiled pattern on the board connecting target IC and its connected IC is defective.
- The component part between target IC and its connected IC is defective.
- Connected IC is defective.

OTHERS CHECK Screen display	Target IC (Its pin number) [Ref. No. of Connected IC]
11. SX DEC 0 CHECK. NG	
SDRAM ERR ALL	IC300, [IC301]
PARITY ERR MEP	IC300 (Internal connection of IC300)
PARITY ERR STREAM	IC300 (Pins 88 to 95, 98, 112)
CLOCK ERR 13.5M CLOCK ERR 27M CLOCK ERR 54M CLOCK ERR 81M	IC300 (Pins 99, 120 to 124, 127 to 132)

OTHERS CHECK Screen display	Target IC (Its pin number) [Ref. No. of Connected IC]
12. SX DEC 1 CHECK. NG	
SDRAM ERR ALL	IC400, [IC401]
PARITY ERR MEP	IC400 (Internal connection of IC400)
PARITY ERR STREAM	IC400 (Pins 88 to 95, 98, 112)
CLOCK ERR 13.5M CLOCK ERR 27M CLOCK ERR 54M CLOCK ERR 81M	IC400 (Pins 99, 120 to 124, 127 to 132)
13. SX DEC 2 CHECK. NG	
SDRAM ERR ALL	IC500, [IC501]
PARITY ERR MEP	IC500 (Internal connection of IC500)
PARITY ERR STREAM	IC500 (Pins 88 to 95, 98, 112)
CLOCK ERR 13.5M CLOCK ERR 27M CLOCK ERR 54M CLOCK ERR 81M	IC500 (Pins 99, 120 to 124, 127 to 132)
14. SX ENC 0 CHECK. NG	
PARITY ERR MEP	IC700 (Pins 165, 168 to 173, 175 to 179, 182 to 186, 189 to 192, 195 to 199), [IC800]
PARITY ERR VIDEO	IC700 (Pins 88, 89, 92 to 101, 105, 106), [IC604]
CLOCK ERR 13.5M CLOCK ERR 27M CLOCK ERR 54M CLOCK ERR 81M	IC700 (Pins 110 to 113, 116, 121 to 127)
SDRAM ERR ALL	IC700, [IC701]
15. SX ENC 1 CHECK. NG	
PARITY ERR MEP	IC900 (Pins 165, 168 to 173, 175 to 179, 182 to 186, 189 to 192, 195 to 199), [IC800]
PARITY ERR VIDEO	IC900 (Pins 88, 89, 92 to 101, 105, 106), [IC604]
CLOCK ERR 13.5M CLOCK ERR 27M CLOCK ERR 54M CLOCK ERR 81M	IC900 (Pins 110 to 113, 116, 121 to 127)
SDRAM ERR ALL	IC900, [IC901]
16. SX MEP CHECK. NG	
SDRAM ERR ALL	IC800, [IC801]
INPUT ERR PARITY	IC800 (Pins 238 to 241, 244 to 247, 250, 251), [IC700]
INPUT ERR SYNC	IC800 (Pin 238), [IC700]
CLOCK ERR 81M CLOCK ERR 54M CLOCK ERR 27M CLOCK ERR 13.5M PLL ERR 81M PLL ERR 54M PLL ERR 27M	IC800 (Pins 107, 111 to 113, 116, 121 to 127)
17. DIGI FIL CHECK. NG	
PARITY ERR B-IN	IC603 (Pins 22 to 29, 31 to 36), [IC300]
PARITY ERR A-IN	IC603 (Pins 3 to 8, 10 to 17), [IC600, IC601, IC608, IC609]

4-2-6. BETACAM PB CHECK Mode (C3)

The C3 : BETACAM PB CHECK mode is used to check the playback RF system based on a Betacam/Betacam SP format. In this unit, one menu is available.



Menu Tree of BETACAM PB Check Mode

Note

DNW-A75's Betacam/Betacam SP PB function is for the NTSC (525/60) system. But the PAL (625/50) system can be simple playback.
DNW-A75P's Betacam/Betacam SP PB function is for the PAL (625/50) system. But the NTSC (525/60) system can be simple playback.

C30 : CHANNEL CONDITION

This menu displays the PB RF level condition of video channels (Y and C) in three steps (GRN, YEL, and RED) when the tape recorded in a Betacam/Betacam SP format is played back in the PLAY mode.

Note

If abnormality exists in the servo system, C30 : CHANNEL CONDITION menu does not function properly.

To execute the check

(1) Press the SET button.
- A white square will be displayed in the upper-right position of the superimposed display. The time data display area will operate as an ordinary time counter.
- To stop the check, press the MENU button two times.

(2) Insert a cassette tape recorded in Betacam/Betacam SP format.

(3) Press the PLAY button to playback the tape in the PLAY mode.
- ">>>" will be displayed on the superimposed display.

Note

Can not be checked in other than PLAY mode. ">>>" is not displayed in playing back the portion recorded in otherwise than Betacam/Betacam SP format or the non-recorded portion.

(4) Check to see that ">>>" is displayed in the "GRN" column of Y and C channels.
- If ">>>" is displayed in columns other than "GRN", refer to "For Condition NG (C30) " on the next page.

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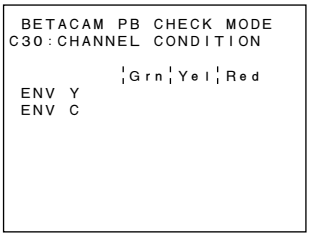
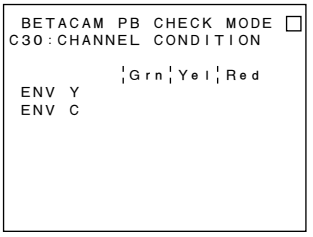
To finish the check

(5) Stop the tape playback operation and eject the cassette.
(6) Press the MENU button once.
  • The white square disappears.
  The time data display area displays the former “C30-CHANNEL COND”.
(7) To exit the menu, press the MENU button once again.

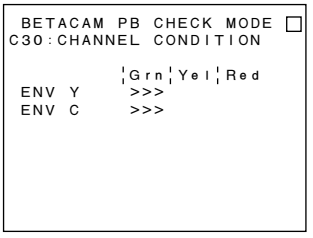
Example of display and operation



(1) ⇩ SET



(2) ⇩ Insert a recorded tape
(3) ⇩ PLAY



(4) ⇩ Check
(5) ⇩ STOP
  ⇩ EJECT
(6) ⇩ MENU

For Condition NG (C30)

Recheck according to the procedures below.

(1) Change the playback portion on the tape.
(2) Recheck in the menu C30.
  When no abnormality is found, the recheck is completed.
(3) Clean the drum for five seconds using a cleaning tape according to Section 5-2-1.
(4) Recheck in the menu C30.
  When no abnormality is found, the recheck is completed.
(5) Clean the drum for fifteen seconds using the cleaning tape again.
(6) Recheck in the menu C30.
  When no abnormality is found, the recheck is completed.
(7) Clean the drum (video heads) with a cleaning cloth according to Sections 5-2-2 and 5-2-3
(8) Recheck in the menu C30.
  When no abnormality is found, the recheck is completed.

If the condition is not improved in the way mentioned above, the possible cause below are considered.

Abnormality on PB tape

• The tape is damaged.
• The tape cannot be recorded properly.

Abnormality in this unit

• Analog Betacam PB system adjustment defect
  ⇨ Readjust the analog Betacam PB system (A3 : BETACAM PB ADJUST)
  Perform the same adjustments at the replacement of the DM-89 board. (Refer to Section 2-11 in the maintenance manual part 2, volume-1.)
• In the tape transport system, adjustment defect or component part installation defect
  ⇨ Readjust the tape transport system or reinstall the part. (Refer to the maintenance manual part 2, volume-1.)
• Worm PB head
  ⇨ After checking the hours meter (H02 : DRUM RUNNING HOURS), replace the upper drum assembly as required.
  (Refer to the maintenance manual part 2, volume-1.)
• Drum assembly defect
• EQ-75 board defect

4-2-7. SERVO ADJUST Mode (A00-01)

The A00-01 : SERVO ADJUST menu is used to adjust the servo system.

Note

In the SERVO ADJUST mode, only the menu number is displayed in a time data display area. (A00-01 is displayed as A00.)

- A0 : SERVO/DT ADJUST
  - A00-01 : SERVO ADJUST
    - A000 : A001-A008 ADJ.
    - A001 : S REEL FG DUTY
    - A002 : T REEL FG DUTY
    - A003 : CAPSTAN FG DUTY
    - A004 : S REEL OFFSET/FRICTION
    - A005 : T REEL OFFSET/FRICTION
    - A006 : S REEL TORQUE
    - A007 : T REEL TORQUE
    - A008 : S/T TENSION OFFSET
    - A010 : CAPSTAN FREE SPEED
    - A011 : RF SWITCHING POSITION
    - A012 : NV-RAM CONTROL
  - A02 : ANALOG DT ADJUST (Describes in Section 4-2-8.)

Note

When the unit has a cassette tape, the cassette tape is automatically ejected on shifting to any lower-level menu from the A00-01 : SERVO ADJUST menu.

A00-01 : SERVO ADJUST

In the A00-01 : SERVO ADJUST menu, the whole menu cannot be displayed on the superimposed display at a time. Therefore, the display is divided into the menu selection screen of A000 to A008 and the menu selection screen of A010 and later. The menu selection screen is automatically switched when the search dial is turned.

```
SERVO ADJUST

 A000:A001-A008 ADJ.
 A001:S REEL FG DUTY
 A002:T REEL FG DUTY
 A003:CAPSTAN FG DUTY
 A004:S REEL OFFSET/FRIC
 A005:T REEL OFFSET/FRIC
 A006:S REEL TORQUE
 A007:T REEL TORQUE
*A008:S/T TENSION OFFSET
 CONTINUE
```

DIAL (↻) ⇩ ⇧ DIAL (↺)

```
SERVO ADJUST (CONTINUED)

 PREVIOUS
*A010:CAPSTAN FREE SPEED
 A011:RF SWITCHING POS.

 A012:NV-RAM CONTROL
```

Note

The menu title of A010 may be displayed as “CAPSTAN SPEED”.

A000 : A001-A008 ADJ.

This menu is used to execute the adjustment menus below automatically and continuously.

A001 : S REEL FG DUTY
A002 : T REEL FG DUTY
A003 : CAPSTAN FG DUTY
A004 : S REEL OFFSET/FRICTION
A005 : T REEL OFFSET/FRICTION
A006 : S REEL TORQUE
A007 : T REEL TORQUE
A008 : S/T TENSION OFFSET

To execute the adjustment menu

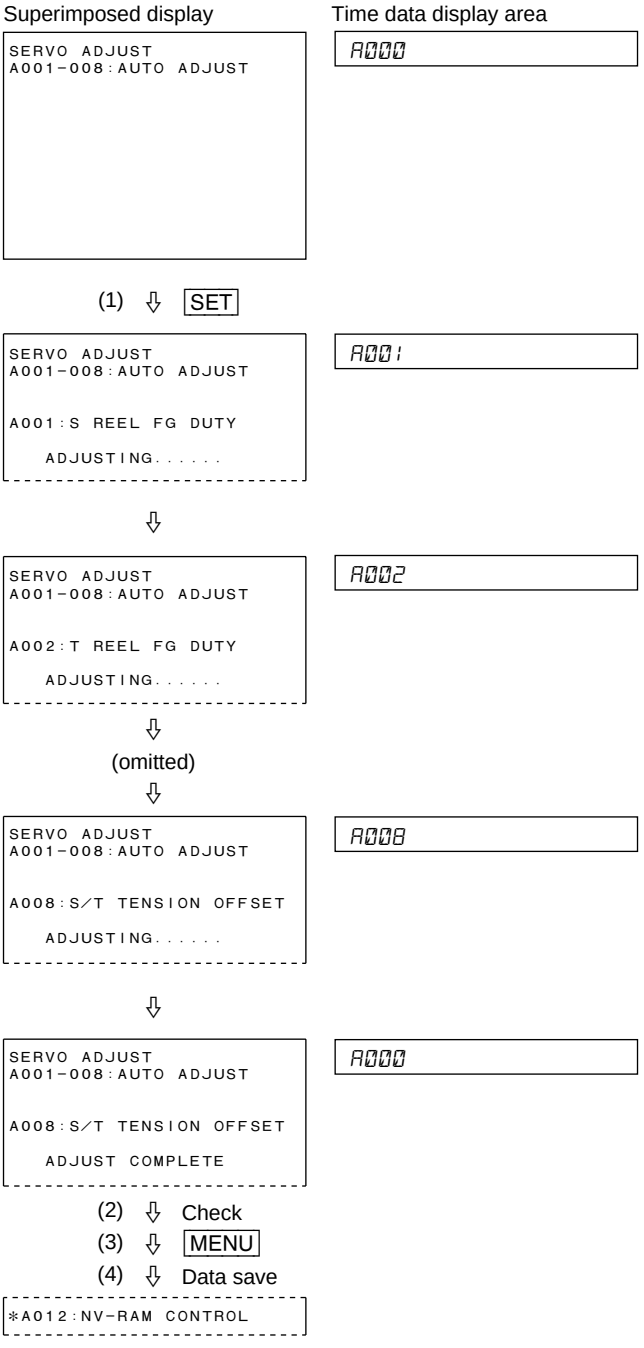
(1) Press the SET button to initiate the automatic adjustment.
- The execution time is about 150 seconds.
- During the adjustment, the adjustment menu name in execution and a message “ADJUSTING.....” will be displayed on the superimposed display, and a message “ADJUST COMPLETE” will be momentarily displayed on completing each adjustment. Only the menu number will be displayed in a time data display area.
- If the auto adjustment fails, a message “# ADJUST INCOMPLETE #” will be displayed halfway. In this case, refer to the “For Automatic Adjustment Failure (A000 to A011)” on page 4-51.

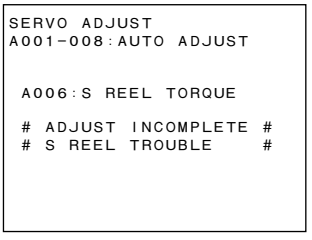
(2) Check the adjustment result.
- When all adjustments are completed normally, the message “ADJUST COMPLETE” is continuously displayed .

(3) To exit the menu, press the MENU button once.

(4) To save the adjustment data into the NV-RAM of a servo system, execute the SAVE SERVO ADJUST DATA in A012 : NV-RAM CONTROL menu.

Example of display and operation





Ex.: When failing the automatic adjustment

A001 : S REEL FG DUTY
A002 : T REEL FG DUTY
A003 : CAPSTAN FG DUTY
A004 : S REEL OFFSET/FRICTION
A005 : T REEL OFFSET/FRICTION
A006 : S REEL TORQUE
A007 : T REEL TORQUE
A008 : S/T TENSION OFFSET

These menus are used to perform the automatic adjustments below.

A001 : S reel FG duty adjustment
A002 : T reel FG duty adjustment
A003 : Capstan FG duty adjustment
A004 : S reel offset/friction adjustment
A005 : T reel offset/friction adjustment
A006 : S reel torque adjustment
A007 : T reel torque adjustment
A008 : S/T tension offset adjustment

To execute the automatic adjustments

(1) Press the SET button to initiate the automatic adjustment.
- The execution time is about fifteen seconds for A001 to A003 and about twenty seconds for others.
- During the adjustment, the adjustment menu name in execution and a message “ADJUSTING.....” will be displayed on only the superimposed display.

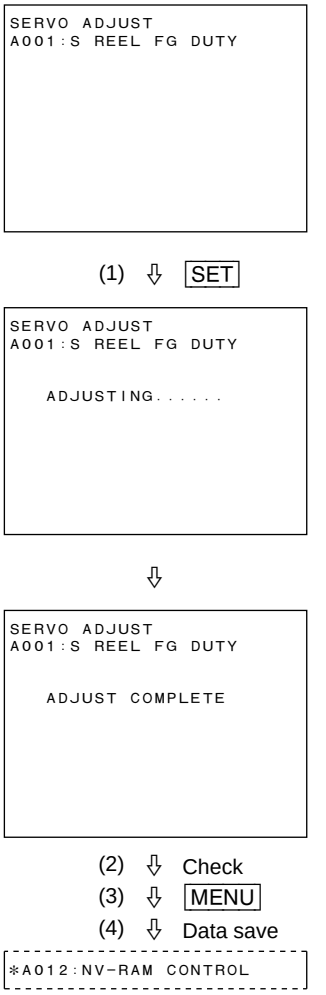
(2) Check the adjustment result.
- On completing the automatic adjustment, a message “ADJUST COMPLETE” will be displayed.
  If the automatic adjustment fails, a message “# ADJUST INCOMPLETE #” will be displayed. In this case, refer to the “For Automatic Adjustment Failure (A000 to A011)” on page 4-51.

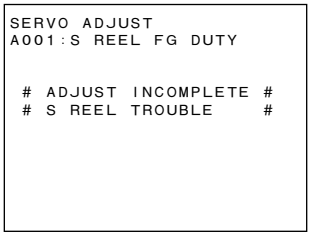
(3) To exit the menu, press the MENU button once.

(4) To save the adjustment data into the NV-RAM of a servo system, execute the SAVE SERVO ADJUST DATA in A012 : NV-RAM CONTROL menu.

Example of display and operation

Example of A001 : S REEL FG DUTY





Ex.: When failing the automatic adjustment

A010 : CAPSTAN FREE SPEED

This menu is used to perform the automatic adjustment of a capstan free speed.

Note

It is necessary to perform this adjustment in both 525/60 and 625/50 systems for both Betacam SX and Betacam SP formats.

To execute the adjustment menu

(1) Insert an alignment tape matched with each system and format.
   For 525/60 system: SR2-1 (Betacam SX format)
   CR2-1B (Betacam SP format)
   For 625/50 system: SR2-1P (Betacam SX format)
   CR2-1B PS (Betacam SP format)
   - The adjustment is initiated on inserting the alignment tape.
   - During the automatic adjustment, a message "ADJUSTING....." will be displayed on only the superimposed display.

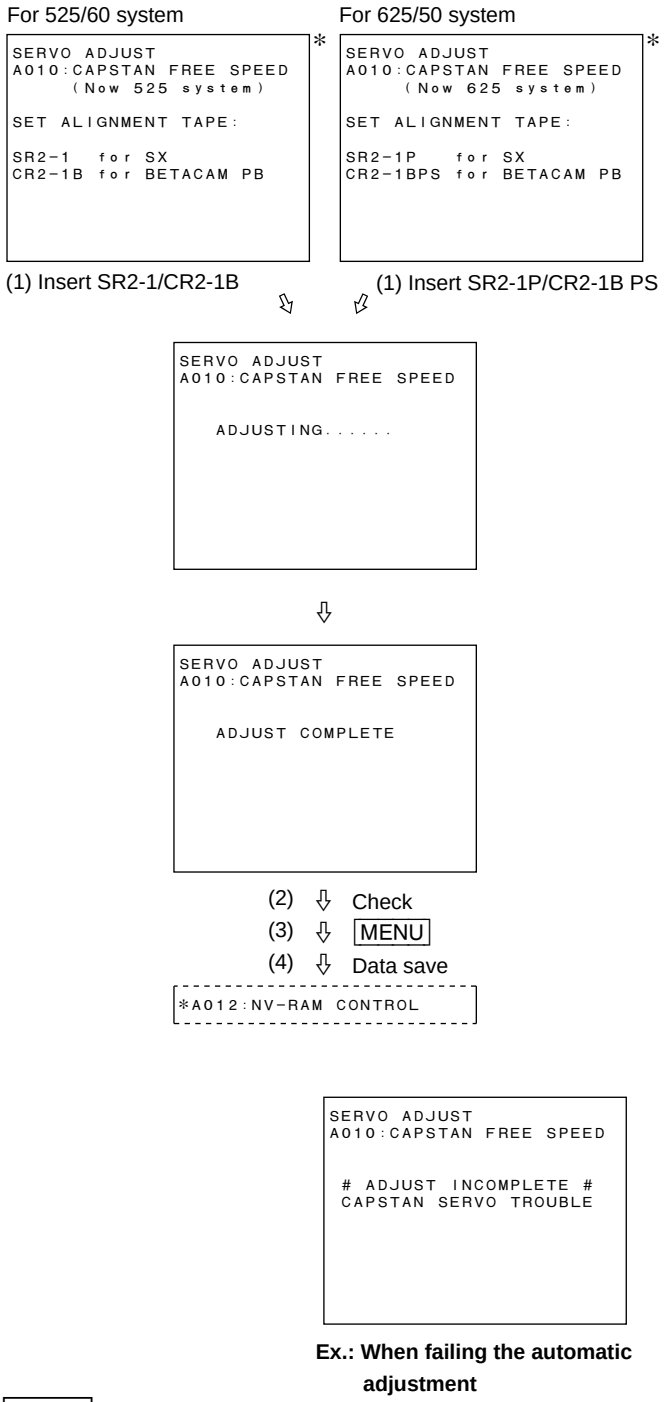
   Notes
   - Be sure to use the specified alignment tape.
     If the specified alignment tape is not used, the adjustment cannot be properly performed even if a message "ADJUST COMPLETE" is displayed on completing the adjustment.
   - To complete the check, the inserted alignment tape requires the continuous playback-able portion more than a check execution time.
     The adjustment execution time is usually about fifteen seconds.

(2) Check the adjustment result.
   - On completing the automatic adjustment, the message "ADJUST COMPLETE" will be displayed. If the automatic adjustment fails, a message "# ADJUST INCOMPLETE #" will be displayed. In this case, refer to the "For Automatic Adjustment Failure (A000 to A011)" on page 4-51.

(3) To exit the menu, press the MENU button once.

(4) To save the adjustment data into the NV-RAM of a servo system, execute the SAVE SERVO ADJUST DATA in A012 : NV-RAM CONTROL menu.

Example of display and operation



Ex.: When failing the automatic adjustment

Note

*: This message is displayed when SV1 ROM version is 1.20 and higher. When it is earlier than 1.20, the message "SET SR2-1 ALIGNMENT TAPE AND PUSH PLAY KEY" is displayed. However, it is not necessary to press the PLAY button.

A011 : RF SWITCHING POS.

This menu is used to adjust the RF switching position automatically or manually. Only the automatic adjustment is described below.

Notes

- It is not necessary to perform this adjustment in both 525/60 and 625/50 systems. On performing it in either system, the other system is automatically updated.
- Alignment tape SR2-1 (for 525/60 system) or SR2-1P (for 625/50 system) located in the beginning of time code 00:25:00:00 in advance is required for this adjustment. If the specified alignment tape is not used, the adjustment cannot be properly performed even if a message "ADJUST COMPLETE" is displayed on completing the adjustment.

To execute the automatic adjustment

(1) Check to see that an ∗ mark is assigned to "AUTO" on the superimposed display.
- If the ∗ mark is assigned to "MANUAL", turn the search dial to set the mark to "AUTO".
- In a time data display area, the automatic adjustment (AUTO) will be displayed as "A0110", and the manual adjustment (MANUAL) will be displayed as "A0111".

(2) Press the SET button.

(3) Insert the alignment tape SR2-1 or SR2-1P located in beginning of time code 00:25:00:00.
- The adjustment is initiated on inserting the alignment tape.
- During the automatic adjustment, a message "ADJUSTING....." will be displayed on only the superimposed display.

(4) Check the adjustment result.
- On completing the automatic adjustment, the message "ADJUST COMPLETE" will be displayed and the alignment tape will automatically be ejected. If the automatic adjustment fails, a message "# ADJUST INCOMPLETE #" will be displayed. In this case, refer to the "For Automatic Adjustment Failure (A000 to A011)" on next page.

(5) To exit the menu, press the MENU button once.

(6) To save the adjustment data into the NV-RAM of a servo system, execute the SAVE SERVO ADJUST DATA in A012 : NV-RAM CONTROL menu.

Example of display and operation

Superimposed display / Time data display area

```
SERVO ADJUST
A011:RF SWITCHING POS.

∗AUTO
 MANUAL

    PG DATA:BDF5
```
A0110

(1) ⇩ [SET]

```
SERVO ADJUST
A011:RF SWITCHING POS.

 SET
 SR2-1
 ALIGNMENT TAPE
 TC 00:25:00:00

    PG DATA:C000
```
A011

(2) ⇩ Insert SR2-1/SR2-1P

```
SERVO ADJUST
A011:RF SWITCHING POS.

   ADJUSTING.....

    PG DATA:BFFF
```
A011

⇩

```
SERVO ADJUST
A011:RF SWITCHING POS.

   ADJUST COMPLETE


    PG DATA:BDF7
```
A011

(3) ⇩ Check
(4) ⇩ [MENU]
(5) ⇩ Data save

```
∗A012:NV-RAM CONTROL
```

```
SERVO ADJUST
A011:RF SWITCHING POS.

 # ADJUST INCOMPLETE #


    PG DATA:C000
```

Ex.: When failing the automatic adjustment

For Automatic Adjustment Failure (A000 to A011)

The circuit in which failure occurred can be traced to some degree by the trouble message displayed together when the message "# ADJUST INCOMPLETE #" is displayed during execution of adjustment menus A000 to A011.

Note

The trouble message display indicates that no adjustment could be performed because the circuit described in this manual did not operate normally. Moreover, other circuits (e.g., control signal system) in which failure actually occurred may also exist.

A000 : A000-A008 ADJUST

Refer to the description of A001 to A008.

A001 : S REEL FG DUTY

When "S REEL FG AMP TROUBLE" is displayed:

⇨ Check the S reel FG amplifier circuit on the MS-58 board.

When "S REEL DRIVER TROUBLE" is displayed:

⇨ Check the S reel motor driver circuit on the DR-315 board.

A002 : T REEL FG DUTY

When "T REEL FG AMP TROUBLE" is displayed:

⇨ Check the T reel FG amplifier circuit on the MS-58 board.

When "T REEL DRIVER TROUBLE" is displayed:

⇨ Check the T reel motor driver circuit on the DR-315 board.

A003 : CAPSTAN FG DUTY

When "CAPSTAN FG AMP TROUBLE" is displayed:

⇨ Check the capstan FG amplifier circuit on the MS-58 board.

⇨ Check the capstan motor driver circuit on the DR-315 board.

A004 : S REEL OFFSET/FRICTION
A006 : S REEL TORQUE

When "# S REEL TROUBLE #" is displayed in these menus:

⇨ Execute the S reel FG duty adjustment (A001 : S REEL FG DUTY) again.

⇨ Check the S reel motor driver circuit on the DR-315 board.

A005 : T REEL OFFSET/FRICTION
A007 : T REEL TORQUE

When "# T REEL TROUBLE #" is displayed:

⇨ Execute the T reel FG duty adjustment (A002 : T REEL FG DUTY) again.

⇨ Check the T reel motor driver circuit on the DR-315 board.

A008 : S/T TENSION OFFSET

When "S REEL DRIVER TROUBLE" is displayed:

⇨ Check the S tension detection circuit on the MS-58 board.

⇨ Check the S reel motor driver circuit on the DR-315 board.

When "T REEL DRIVER TROUBLE" is displayed:

⇨ Check the T tension detection circuit on the MS-58 board.

⇨ Check the T reel motor driver circuit on the DR-315 board.

A010 : CAPSTAN FREE SPEED

Check to see that the played back tape is the following alignment tape.

SR2-1 (for 525/60 system of Betacam SX)
SR2-1P (for 625/50 system of Betacam SX)
CR2-1B (for 525/60 system of Betacam SP)
CR2-1B PS (for 625/50 system of Betacam SP)

When "CAPSTAN SERVO TROUBLE" is displayed:

⇨ Execute the capstan FG duty adjustment (A003 : CAPSTAN FG DUTY) again.

⇨ Check the capstan FG amplifier circuit and CTL amplifier circuit on the MS-58 board.

When "CAPSTAN DRIVER TROUBLE" is displayed:

⇨ Check the capstan motor driver circuit on the DR-315 board.

A011 : RF SWITCHING POS.

Check to see that the played back tape is the following alignment tape.

SR2-1 (for 525/60 system of Betacam SX)
SR2-1P (for 625/50 system of Betacam SX)

A012 : NV-RAM CONTROL

This menu is used to save the servo adjustment data adjusted in the SERVO ADJUST mode into the NV-RAM of a servo system.

CAUTION

Do not save the adjustment data into the NV-RAM when abnormality is found during automatic adjustment (when the message "# ADJUST INCOMPLETE #" is displayed).

Note

When the power is turned off without saving the adjusted data, the adjustment data returns to the former saved data.

To execute the data save

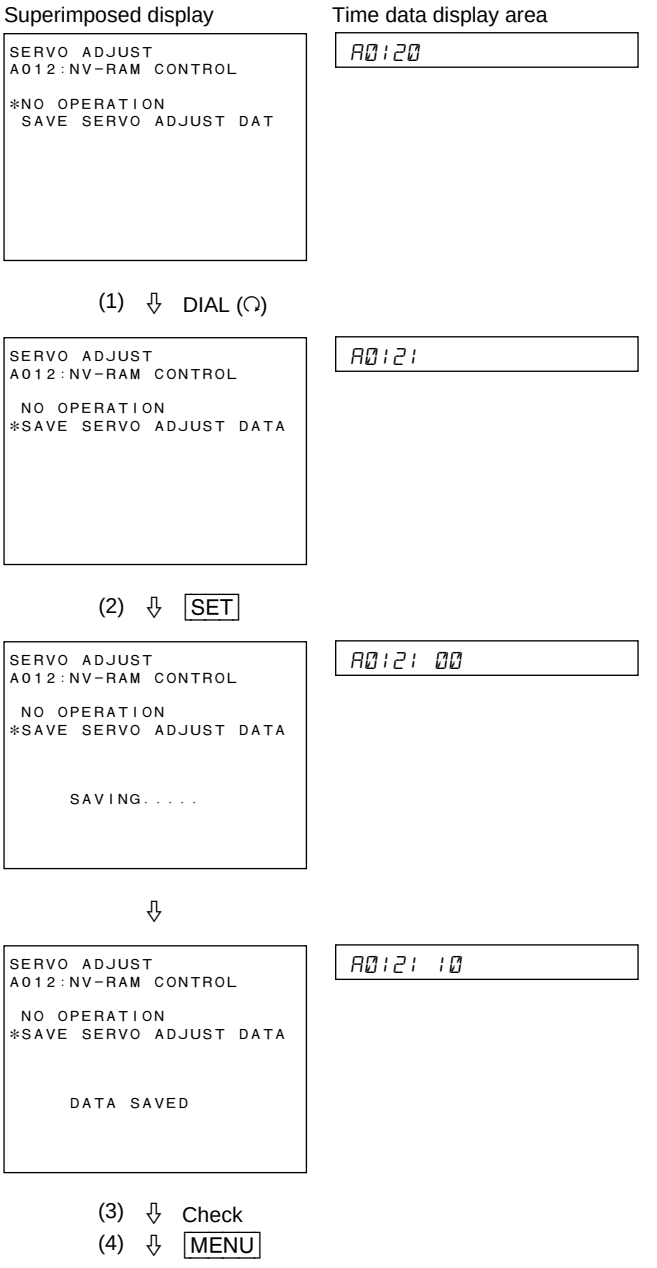
(1) Turn the search dial to set the ∗ mark to "SAVE SERVO ADJUST DATA" on the superimposed display.
- In a time data display area, NO OPERATION will be displayed as "A0120", and SAVE SERVO ADJUST DATA will be displayed as "A0121".

(2) Press the SET button to execute the data save.
- On pressing it, the data transmission is initiated. The data transmission time is about ten seconds.
- During the data transmission, a message "SAVING....." will be displayed on the superimposed display, and "A0121 00" will be displayed in the time data display area.

(3) Check to see that the data transmission is completed.
- On completing the data transmission, a message "DATA SAVED" will be displayed on the superimposed display and "A0121 10" will be displayed in the time data display area.

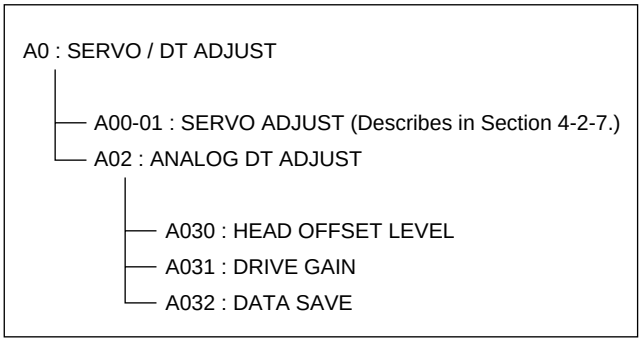
(4) To exit the menu, press the MENU button once.

Example of display and operation



4-2-8. ANALOG DT ADJUST Mode (A02)

The A02: ANALOG DT ADJUST mode is used to adjust the DT system. Three menus are available.


A0 : SERVO / DT ADJUST
A00-01 : SERVO ADJUST (Describes in Section 4-2-7.)
A02 : ANALOG DT ADJUST
A030 : HEAD OFFSET LEVEL
A031 : DRIVE GAIN
A032 : DATA SAVE

Menu Tree of Analog DT System Adjustment Mode

A030 : HEAD OFFSET LEVEL

This menu is used to adjust the offset levels of DT heads for analog Betacam playback. Only the automatic adjustment is described below.

Notes

- It is necessary to perform this adjustment in both 525/60 and 625/50 systems.
- It is required the following alignment tape located in the beginning of color-bar portion in advance.

To execute the adjustment

(1) Prepare the following alignment tape located in the beginning of the color-bar portion.
In 525/60 system: CR5-1B (TC 00:00:14:00) or CR5-2A (TC 00:00:00:00)
In 625/50 system: CR5-1B PS (TC 00:00:14:00) or CR5-2A PS (TC 00:00:00)

(2) Insert the cassette tape into this unit.

(3) Check to see that an ∗ mark is assigned to “Start auto adjust” on the superimposed display.
- If the ∗ mark is not assigned to “Start auto adjust”, turn the search dial to set the mark to “Start auto adjust”.

(4) Press the SET button once.
- On pressing it, a message “Push PLAY button” will be displayed on the superimposed display.

(5) Press the PLAY button to initiate the automatic adjustment in the PLAY mode.
- During the automatic adjustment, a message “ADJUSTING.....” will be displayed.

(6) Check the result of checking.
- On completing the automatic adjustment, a message “ADJUST COMPLETE” will be displayed.
- If the automatic adjustment fails, a message “# ADJUST INCOMPLETE #” is displayed. In this case, refer to “When failing the automatic adjustment” on the next page.

(7) To exit the menu, press the MENU button once.

(8) To save the adjustment data into the NV-RAM of a DT system, execute the SAVE ANALOG DT DATA in A032 : DATA SAVE menu.

Note

The alignment tape will automatically be ejected in returning to the A0 : SERVO/DT ADJUST mode picture.

Example of display and operation

```
    ANALOG DT ADJUST
A030:HEAD OFFSET LEVEL
     MODE : PLAY

*Start auto adjust
 Ach manual adjust
 Bch manual adjust



  Ach:00    Bch:00
```

(1)(2) ⇩ Insert the alignment tape
(3) ⇩ DIAL(↺)
(4) ⇩ [SET]

```
    ANALOG DT ADJUST
A030:HEAD OFFSET LEVEL
     MODE : PLAY

*Start auto adjust
 Ach manual adjust
 Bch manual adjust

   Push PLAY button


  Ach:00    Bch:00
```

(5) ⇩ [PLAY]

```
    ANALOG DT ADJUST
A030:HEAD OFFSET LEVEL
     MODE : PLAY

*Start auto adjust
 Ach manual adjust
 Bch manual adjust

   ADJUSTING.....


  Ach:00    Bch:00
```

⇩

```
    ANALOG DT ADJUST
A030:HEAD OFFSET LEVEL
     MODE : PLAY

*Start auto adjust
 Ach manual adjust
 Bch manual adjust

   ADJUST COMPLETE


  Ach:01    Bch:FF
```

(6) ⇩ Check
(7) ⇩ [MENU]
(8) ⇩ Data save

```
*A032:DATA SAVE
```

When failing the automatic check

If the message "# ADJUST INCOMPLETE #" is displayed during the automatic adjustment, perform the following check.

(1) Perform C060: SG LOOP CHECK of C04: ANALOG DT CHECK. (Refer to Section 4-2-3.)
(2) Adjust again. If the automatic adjustment fails, perform step (3).
(3) Confirm that "Y RF ENVELOPE" signal exists at the test terminal TP2700 on the SS-83 board.
- Not exist; Confirm the DM-89 board.
- Exists; Confirm the SS-83 board.

```
    ANALOG DT ADJUST
A030:HEAD OFFSET LEVEL
     MODE : PLAY

*Start auto adjust
 Ach manual adjust
 Bch manual adjust

 # ADJUST INCOMPLETE #
      Ach

  Ach:00    Bch:00
```

Ex.: When failing the automatic adjustment

http://getMANUAL.com

A031 : DRIVE GAIN

This menu is used to adjust the drive gain of an analog DT susyem for analog Betacam playback. Only the automatic adjustment is described below.

Notes

- It is necessary to perform this adjustment in both 525/60 and 625/50 systems.
- It is required the following alignment tape located in the beginning of color-bar portion in advance.

To execute the adjustment

(1) Prepare the following alignment tape located in the beginning of the color-bar portion.
In 525/60 system: CR5-1B (TC 00:00:14:00) or CR5-2A (TC 00:00:00:00)
In 625/50 system: CR5-1B PS (TC 00:00:14:00) or CR5-2A PS (TC 00:00:00)

(2) Insert the cassette tape into this unit.

(3) Check to see that an ∗ mark is assigned to “Start auto adjust” on the superimposed display.
- If the ∗ mark is not assigned to “Start auto adjust”, turn the search dial to set the mark to “Start auto adjust”.

(4) Press the SET button once.
- On pressing it, a message “Set VARIABLE × 3” will be displayed on the superimposed display.

(5) Press the VAR button to enter the VARIABLE mode.
- The VAR button lights.

(6) Turn the search dial in the FORWARD (↻) direction to enter the VARIABLE +3 times normal speed mode.
- On entering the VARIABLE +3 times normal speed mode, the automatic adjustment is initiated.
- During the automatic adjustment, a message “ADJUSTING.....” will be displayed.

(7) Check the result of checking.
- On completing the automatic adjustment, a message “ADJUST COMPLETE” will be displayed.
- If the automatic adjustment fails, a message “# ADJUST INCOMPLETE #” is displayed. In this case, refer to “When failing the automatic adjustment” on the next page.

(8) To exit the menu, press the MENU button once.

(9) To save the adjustment data into the NV-RAM of a DT system, execute the SAVE ANALOG DT DATA in A032 : DATA SAVE menu.

Note

The alignment tape will automatically be ejected in returning to the A0 : SERVO/DT ADJUST mode picture.

Example of display and operation

```
    ANALOG DT ADJUST
A031:DRIVE GAIN
    MODE : VARIABLE ×3

*Start auto adjust
 Ach manual adjust
 Bch manual adjust



  Ach:0280  Bch:002A0
```

(1)(2) ⇩ Insert the alignment tape
(3) ⇩ DIAL(↻)
(4) ⇩ [SET]

```
    ANALOG DT ADJUST
A031:DRIVE GAIN
    MODE : VARIABLE ×3

*Start auto adjust
 Ach manual adjust
 Bch manual adjust

   Set VARIABLE ×3


  Ach:0280  Bch:002A0
```

(5)(6) ⇩ [VAR], DIAL(↻)

```
    ANALOG DT ADJUST
A031:DRIVE GAIN
    MODE : VARIABLE ×3

*Start auto adjust
 Ach manual adjust
 Bch manual adjust

   ADJUSTING.....


  Ach:0280  Bch:002A1
```

⇩

```
    ANALOG DT ADJUST
A031:DRIVE GAIN
    MODE : VARIABLE ×3

*Start auto adjust
 Ach manual adjust
 Bch manual adjust

   ADJUST COMPLETE


  Ach:0280  Bch:002A0
```

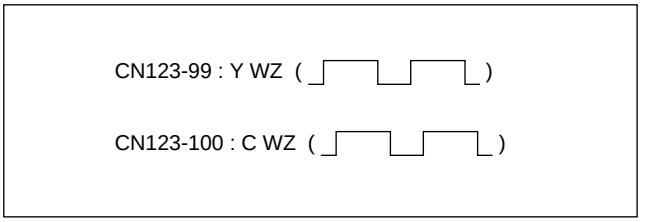
(7) ⇩ Check
(8) ⇩ [JOG]
(9) ⇩ [MENU]
(10) ⇩ Data save

```
*A032:DATA SAVE
```

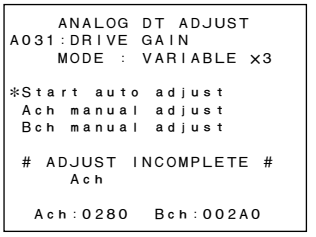
When failing the automatic check

If the message "# ADJUST INCOMPLETE #" is displayed during the automatic adjustment, perform the following check.

(1) Perform C060: SG LOOP CHECK of C04: ANALOG DT CHECK. (Refer to Section 4-2-3.)
(2) Adjust again. If the automatic adjustment fails, perform step (3).
(3) Confirm that the signal at pins 99 and 100 of CN123 on the SS-83 board are synchronized.



- The no signals exist or are synchronized:
  ⇨ Confirm the DM-89, TBC-23A/24 and EQ-75 board.
- The signal exists and are synchronized:
  ⇨ Confirm the SS-83 board.



Ex.: When failing the automatic adjustment

A032 : DATA SAVE

This menu is used to save the adjustment data adjusted in the ANALOG DT ADJUST mode into the NV-RAM of the DT system.

CAUTION

Do not save the adjustment data into the NV-RAM when abnormality is found during automatic adjustment (when the message "# ADJUST INCOMPLETE #" is displayed).

Note

When the power is turned off without saving the adjusted data, the adjustment data returns to the former saved data.

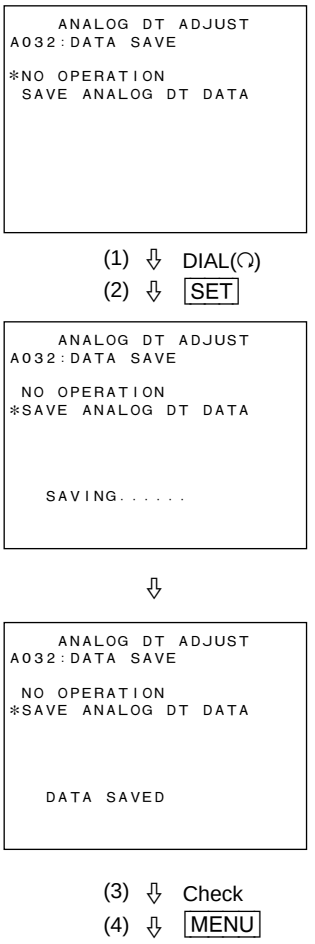
To execute the data save

(1) Turn the search dial to set the ✻ mark to "SAVE ANALOG DT DATA" on the superimposed display.
(2) Press the SET button to execute the data save.
- On pressing it, the data transmission is initiated.
- During the data transmission, a message "SAVING....." will be displayed on the superimposed display.

(3) Check to see that the data transmission is completed.
- On completing the data transmission, a message "DATA SAVED" will be displayed on the superimposed display.

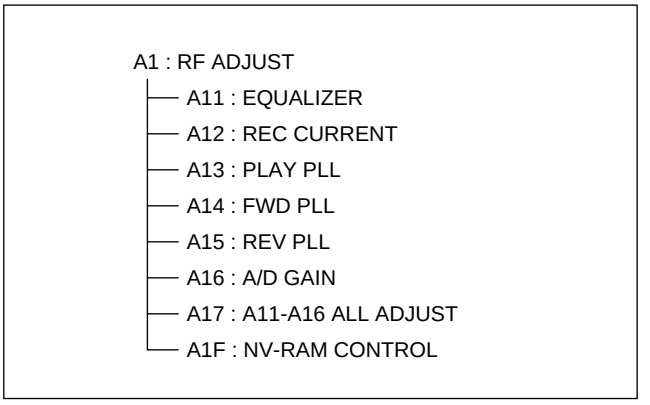
(4) To exit the menu, press the MENU button once.

Example of display and operation



4-2-9. RF ADJUST Mode (A1)

The A1 : RF ADJUST mode is used to adjust the RF system.
Eight menus are available.


A1 : RF ADJUST
A11 : EQUALIZER
A12 : REC CURRENT
A13 : PLAY PLL
A14 : FWD PLL
A15 : REV PLL
A16 : A/D GAIN
A17 : A11-A16 ALL ADJUST
A1F : NV-RAM CONTROL

Menu Tree of RF System Adjustment Mode

Note

If abnormally exists in the servo system, each menu in A1 : RF ADJUST mode does not function properly.

A11 : EQUALIZER
A12 : REC CURRENT
A13 : PLAY PLL
A14 : FWD PLL
A15 : REV PLL
A16 : A/D GAIN

These menus are used to perform the automatic adjustments below.

A11 : EQUALIZER

This menu automatically adjusts the PB RF levels (VC) and PB equalizers' gain (EQ) and phase (PH) for the PB heads (channels A1, A2, A5, A6, B1, B2, B5, B6, CNFA, and CNFB).

A12 : REC CURRENT

This menu automatically adjusts the recording current levels for the REC heads (channels A and B).

A13 : PLAY PLL

This menu automatically adjusts the VCO free-running frequency in a PB PLL circuit for PLAY mode.

A14 : FWD PLL

This menu automatically adjusts the VCO free-running frequency in a PB PLL circuit for F FWD mode.

A15 : REV PLL

This menu automatically adjusts the VCO free-running frequency in a PB PLL circuit for REV mode.

A16 : A/D GAIN

This menu automatically adjusts the gain in converting a PB RF signal from analog to digital.

```
    RF ADJUST MODE
A11:EQUALIZER

 Auto Adjust (Push SET)

 ch  RSLT    ch  RSLT
 A1          B1
 A2          B2
 A5          B5
 A6          B6
 NA          NB
*ALL
```

```
    RF ADJUST MODE
A11:EQUALIZER

 Auto Adjust (Push SET)

 ch VC EQ PH ch VC EQ PH
 A1 xx xx xx B1 xx xx xx
 A2 xx xx xx B2 xx xx xx
 A5 xx xx xx B5 xx xx xx
 A6 xx xx xx B6 xx xx xx
 NA xx xx xx NB xx xx xx
*ALL
```

A11 : EQUALIZER

```
    RF ADJUST MODE
A12:REC CURRENT

 Auto Adjust (Push SET)

 ch  RSLT    ch  RSLT
 A           B
*ALL
```

```
    RF ADJUST MODE
A12:REC CURRENT

 Auto Adjust (Push SET)

 ch   VR     ch   VR
 A    xx     B    xx
*ALL
```

A12 : REC CURRENT

```
    RF ADJUST MODE
A13:PLAY PLL

 Auto Adjust (Push SET)

 ch  RSLT    ch  RSLT
 A1/5        B1/5
 A2/6        B2/6
*ALL
```

```
    RF ADJUST MODE
A13:PLAY PLL

 Auto Adjust (Push SET)

 ch   VR     ch   VR
 A1/5 xx     B1/5 xx
 A2/6 xx     B2/6 xx
*ALL
```

A13 : PLAY PLL

```
    RF ADJUST MODE
A14:FWD PLL

 Auto Adjust (Push SET)

 ch  RSLT    ch  RSLT
 A1/5        B1/5
 A2/6        B2/6
*ALL
```

```
    RF ADJUST MODE
A14:FWD PLL

 Auto Adjust (Push SET)

 ch   VR     ch   VR
 A1/5 xx     B1/5 xx
 A2/6 xx     B2/6 xx
*ALL
```

A14 : FWD PLL

```
    RF ADJUST MODE
A15:REV PLL

 Auto Adjust (Push SET)

 ch  RSLT    ch  RSLT
 A1/5        B1/5
 A2/6        B2/6
*ALL
```

```
    RF ADJUST MODE
A15:REV PLL

 Auto Adjust (Push SET)

 ch   VR     ch   VR
 A1/5 xx     B1/5 xx
 A2/6 xx     B2/6 xx
*ALL
```

A15 : REV PL

```
    RF ADJUST MODE
A16:A/D GAIN

 Auto Adjust (Push SET)

 ch  RSLT    ch  RSLT
 A1/5        B1/5
 A2/6        B2/6
*ALL
```

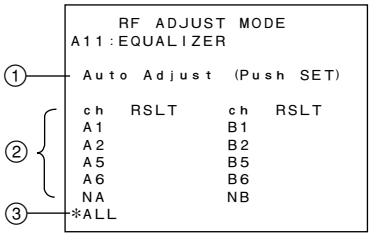
```
    RF ADJUST MODE
A16:A/D GAIN

 Auto Adjust (Push SET)

 ch   VR     ch   VR
 A1/5 xx     B1/5 xx
 A2/6 xx     B2/6 xx
*ALL
```

A16 : A/D GAIN

Note

Right side displays are examples while pressing the STOP button.
Actually, each adjustment data is displayed at the “xx” portion.

Description of superimposed display



Ex. A11 : EQUALIZER

① The display in this line changes. Each display and its meaning are described below.

Auto Adjust(Push SET) :	Press the SET button to initiate the automatic adjustment.
Insert SR5-1 :	Insert an alignment tape.
Insert Blank Tape :	Insert the tape on which recording is possible.
Auto Tracking ... :	Tracking is in an optimization process.
Auto Adjusting ... :	Automatic adjustment is in progress.
Auto Adjust Complete :	Automatic adjustment is completed.
Auto Adjust Failure :	Automatic adjustment fails.
Condition NG :	Error condition defect.

② To perform the automatic adjustment for single channel (circuit), select a channel name using an * mark.
The adjustment result (OK, NG, or FAIL) will be displayed on the right of the channel name.
"OK": When the channel can be adjusted normally
"NG": If the error condition of the channel is bad
"FAIL": If the automatic adjustment fails

Notes

- "RSLT" indicates the result.
- "NA" indicates CNFA.
- "NB" indicates CNFB.

The adjustment data in each channel (circuit) is displayed while pressing the STOP button except in adjusting.

Note

Do not press the STOP button in adjusting. If pressing it in adjusting, the tape stops and the automatic adjustment becomes impossible.

③ To perform the automatic adjustment for all channels (circuit) at a time, select "ALL" using the * mark.
During the check, the adjustment result in each channel is displayed in area ②.
After the automatic adjustment in all channels is completed, the adjustment result (OK, NG, or FAIL) will be displayed on the right of "ALL".
"OK": When all channels (circuits) are "OK"
"NG": If both "NG" and "OK" occur in channels
"FAIL": If one or more "FAIL" occur in channels

To execute the adjustment

(1) Insert the specified cassette tape.

Notes

- Be sure to use the specified alignment tape.
  If the specified cassette tape is not used, the adjustment cannot be properly performed even if the message "Auto Adjust Complete" is displayed on completing the adjustment. In A12 : REC CURRENT menu, insert the tape that can be recorded by Betacam SX format. In other menus, insert alignment tape SR5-1 (for 525/60 system) or SR5-1P (for 625/50 system).
- In A12 : REC CURRENT menu, execute this menu under a REC INHIBIT indicator on the lower control panel is off. If this indicator lights, the cassette tape is automatically ejected.
  This indicator lights when a REC inhibit plug on the cassette tape is pushed or when a REC INHIBIT switch on the subcontrol panel is set to ON.
- Take care that the tape transport mode does not change during automatic adjustment.
  Any adjustment cannot be properly performed in modes other than tape transport that was set automatically. Moreover, in modes other than tape transport, the automatic adjustment cannot be performed any longer or "FAIL" or "NG" is displayed as the adjustment result. Therefore, pay attention to the transport start position of the tape so that the end and beginning of the tape are not detected during adjustment. The minimum tape amount required for normal automatic adjustment is shown in the table on the next page. However, the tape amount increases or decreases when abnormality occurs.

Menu	Ordinary adjustment time	Tape amount required (Transport mode)
A11 : EQUALIZER Ⓣ	About 2 min./ALL, about 15 sec./channel	Adjustment time (PLAY)
A12 : REC CURRENT Ⓣ	About 7 sec./ALL, about 3 sec./channel	Adjustment time (REC)
A13 : PLAY PLL	About 12 sec./ALL, about 10 sec./circuit	Adjustment time (PLAY)
A14 : FWD PLL	About 10 sec.	About 10 min. (F FWD)
A15 : REV PLL	About 10 sec.	About 11 min. (REV)
A16 : A/D GAIN Ⓣ	About 90 sec./ALL, about 10 sec./circuit	Adjustment time (PLAY)

In a menu with Ⓣ, tracking operation is performed.

(2) Turn the search dial to set the ∗ mark to the channel to be adjusted or ALL.
- Usually, select ALL.

(3) Press the SET button to initiate the automatic adjustment.
- The automatic adjustment is initiated after automatically running the tape.
- During the automatic adjustment, the message “Auto Tracking ...” (only a menu in which tracking operation is performed) or “Auto Checking ...” will be displayed.

Note

When executing ALL adjustment in the menu in which tracking operation is carried out, the adjustment result of the channel is displayed every time one-channel (circuit) adjustment is completed.
- The time data display area displays an ordinary time counter.
- To cancel the automatic adjustment, press the MENU button once.
- When no cassette tape is inserted, the message “Insert SR5-1” or “Insert Blank Tape” will be displayed.
  In this case, insert the specified tape. The adjustment is then initiated after automatically running the tape.

Notes
- If the message “Auto Adjust (Push SET)” is continuously displayed, the non-recorded portion on the tape is judged to be played back. Set the tape position to the beginning of recorded portion. Change the playback position on the tape (not including A12 : REC CURRENT menu).
- Keep the unit until automatic adjustment is completed. Any adjustment cannot be properly performed if the tape transport state is changed by touching some button or search dial. In this case, the adjustment freezes or the adjustment result becomes “FAIL” or “NG”.

(4) Check to see the result of automatic adjustment on the superimposed display.
- If no abnormality is found, “OK” will be displayed on the right of the selected channel (circuit) or “ALL”.
- If “Condition NG” or “Auto Adjust Failure” is displayed, refer to the “For Condition NG/Automatic Adjustment Failure” on page 4-65.
- To see the adjustment data, press the STOP button.

Note

“OK”, “NG”, or “FAIL” is also displayed in the time data display area.
The adjustment result for each channel (circuit) is displayed in the time data display area on turning the search dial after completing ALL adjustment.

(5) To exit the menu, press the MENU button once.
To execute the automatic adjustment again in this menu, go to step (2).

(6) To save the adjustment data into the NV-RAM of an RF system, execute SAVE ALL ADJUST DATA in A1F : NV-RAM CONTROL menu.
To return the adjustment data to the former saved data before adjustment, execute ALL DATA PREVIOUS in A1F : NV-RAM CONTROL menu.

Note

Do not save the adjustment data into NV-RAM when abnormality is found during automatic adjustment (When the message “Auto Adjust Failure” or “Condition NG” is displayed).

Example of display and operation

Ex.: When ALL is selected in A11 : EQUALIZER

```
    RF ADJUST MODE
A11:EQUALIZER

 Auto Adjust  (Push SET)

 ch   RSLT     ch   RSLT
 A1            B1
 A2            B2
 A5            B5
 A6            B6
 NA            NB
*ALL
```

(1) ⇩ Insert SR5-1/SR5-1P
(2) ⇩ Select
(3) ⇩ SET

```
    RF ADJUST MODE
A11:EQUALIZER

 Auto Tracking ...

 ch   RSLT     ch   RSLT
 A1            B1
 A2            B2
 A5            B5
 A6            B6
 NA            NB
*ALL
```

⇩

```
    RF ADJUST MODE
A11:EQUALIZER

 Auto Adjusting .......

 ch   RSLT     ch   RSLT
 A1            B1
 A2            B2
 A5            B5
 A6            B6
 NA            NB
*ALL
```

⇩

```
    RF ADJUST MODE
A11:EQUALIZER

 Auto Adjust Complete

 ch   RSLT     ch   RSLT
 A1    OK      B1
 A2            B2
 A5            B5
 A6            B6
 NA            NB
*ALL
```

⇩
(omitted)
⇩

```
    RF ADJUST MODE
A11:EQUALIZER

 Auto Adjust Complete

 ch   RSLT     ch   RSLT
 A1    OK      B1    OK
 A2    OK      B2    OK
 A5    OK      B5    OK
 A6    OK      B6    OK
 NA    OK      NB    OK
*ALL   OK
```

(4) ⇩ Check
(5) ⇩ MENU
(6) ⇩ Data save

```
*A1F:NV-RAM CONTROL
```

Ex.: When ALL is elected in A12 : REC CURRENT.

```
    RF ADJUST MODE
A12:REC CURRENT

 Auto Adjust  (Push SET)

 ch   RSLT     ch   RSLT
 A             B
*ALL
```

(1) ⇩ Insert a recording tape
(2) ⇩ Select
(3) ⇩ SET

```
    RF ADJUST MODE
A12:REC CURRENT

 Auto Adjusting .......

 ch   RSLT     ch   RSLT
 A             B
*ALL
```

⇩

```
    RF ADJUST MODE
A12:REC CURRENT

 Auto Adjust Complete

 ch   RSLT     ch   RSLT
 A     OK      B
*ALL
```

⇩

```
    RF ADJUST MODE
A12:REC CURRENT

 Auto Adjusting .......

 ch   RSLT     ch   RSLT
 A     OK      B
*ALL
```

⇩

```
    RF ADJUST MODE
A12:REC CURRENT

 Auto Adjust Complete

 ch   RSLT     ch   RSLT
 A     OK      B     OK
*ALL   OK
```

(4) ⇩ Check
(5) ⇩ MENU
(6) ⇩ Data save

```
*A1F:NV-RAM CONTROL
```

Ex.: When ALL is selected in A13 : PLAY PLL

```
    RF ADJUST MODE
A13:PLAY PLL

 Auto Adjust  (Push SET)

 ch   RSLT     ch   RSLT
 A1/5          B1/5
 A2/6          B2/6
*ALL
```

(1) ⇩ Insert SR5-1/SR5-1P
(2) ⇩ Select
(3) ⇩ SET

```
    RF ADJUST MODE
A13:PLAY PLL

 Auto Adjusting

 ch   RSLT     ch   RSLT
 A1/5          B1/5
 A2/6          B2/6
*ALL
```

⇩

```
    RF ADJUST MODE
A13:PLAY PLL

 Auto Adjust  (Push SET)

 ch   RSLT     ch   RSLT
 A1/5 OK       B1/5 OK
 A2/6 OK       B2/6 OK
*ALL   OK
```

(4) ⇩ Check
(5) ⇩ MENU
(6) ⇩ Data save

```
*A1F:NV-RAM CONTROL
```

A17 : A11-A16 ALL ADJUST

This menu executes the automatic adjustment of A11 to A16 described previously in the following order.

A13: PLAY PLL
A16: A/D GAIN
A11: EQUALIZER
A14: FWD PLL
A15: REV PLL
A12: REC CURRENT

To execute the automatic adjustment

(1) Insert an alignment tape SR5-1 (for 525/60 system) or SR5-1P (for 625/50 system) rewound to the tape top.
Note
Be sure to use the specified alignment tape.
If the specified cassette tape is not used, the adjustment cannot be properly performed.

(2) Press the SET button to initiate the automatic adjustment.
- The automatic adjustment is initiated after automatically running the tape.
- The superimposed display during the automatic adjustment is displayed in the same way as when each adjustment is independently executed.
- The adjustment for a PB system is completed in about five to six minutes unless the message “Condition NG” or “Auto Adjust Failure” is displayed.
- On completing the adjustment for the PB system, a message “Set a blank tape and push SET button for REC CURRENT adjustment” is displayed on the superimposed display. The alignment tape stops with rewound to the tape top.

(3) Eject the alignment tape.

(4) Insert the cassette tape on which recording is possible.

(5) Press the SET button.
- On pressing it, the automatic adjustment (A12 : REC CURRENT) in a REC system is initiated.
- The superimposed display during the automatic adjustment is displayed in the same way as when the adjustment is independently executed.
- If message “Condition NG” or “Auto Adjust Failure” is not displayed, the adjustment in a REC system is completed after several seconds.
- The adjustment for the REC system is completed in several seconds unless the message “Condition NG” or “Auto Adjust Failure” is displayed.

(6) Check to see that the message “Auto Adjust Complete” is displayed on the superimposed display.
- When seeing the adjustment data, perform in each menu.

Note

If abnormality exists during adjustment, message “Condition NG” or “Auto Adjust Failure” is displayed in the same way as when the adjustment is executed independently. The automatic adjustment stops in the adjustment menu. In the time data display area, a message “A17-ALL FAIL” or “A17-ALL NG” is displayed.
- If the message “Condition NG” or “Auto Adjust Failure” is displayed, refer to the “For Condition NG/Automatic Adjustment Failure” on page 4-65.
- To check the adjustment data, press the STOP button.

(7) To exit the menu, press the MENU button once.
- To execute readjustment, press the MENU button once, then select the menu again.

(8) To save the adjustment data into the NV-RAM of an RF system, execute SAVE ALL ADJUST DATA in A1F : NV-RAM CONTROL menu.
To return the adjustment data to the former saved data before adjustment, execute ALL DATA PREVIOUS in A1F : NV-RAM CONTROL menu.
Note
Do not save the adjustment data into the NV-RAM when abnormality is found during automatic adjustment (when the message “Auto Adjust Failure” or “Condition NG” is displayed).

Example of display and operation

Superimposed display

```
RF ADJUST MODE
A17:A11-A16 ALL ADJUST

 Auto Adjust (Push SET)
```

Time data display area

```
A17-PUSH SET BTN
```

(1) ⇩ Insert SR5-1/SR5-1P
(2) ⇩ [SET]

```
    RF ADJUST MODE      □
A17:A11-A16 ALL ADJUST
 A13:PLAY PLL
 Auto Adjusting

 ch  RSLT    ch  RSLT
 A1/5        B1/5
 A2/6        B2/6
*ALL
```

⇩
(omitted)
⇩

```
    RF ADJUST MODE      □
A17:A11-A16 ALL ADJUST
 A16:A/D GAIN
 Auto Adjusting

 ch  RSLT    ch  RSLT
 A1/5        B1/5
 A2/6        B2/6
*ALL
```

⇩
(omitted)
⇩

```
    RF ADJUST MODE      □
A17:A10-A16 ALL ADJUST
 A11:EQUALIZER
 Auto Adjusting

 ch  RSLT    ch  RSLT
 A1          B1
 A2          B2
 A5          B5
 A6          B6
 NA          NB
*ALL
```

⇩
(omitted)
⇩
(continue)

(continued)
⇩

```
    RF ADJUST MODE      □
A17:A11-A16 ALL ADJUST

 Set a blank tape and
 push SET button for
 REC CURRENT adjustment.
```

(3) ⇩ [EJECT]
(4) ⇩ Insert a recording tape
(5) ⇩ [SET]

```
    RF ADJUST MODE      □
A17:A11-A16 ALL ADJUST
 A12:REC CURRENT
 Auto Adjusting

 ch  RSLT    ch  RSLT
 A           B
*ALL
```

⇩
(omitted)
⇩

```
    RF ADJUST MODE
A17:A11-A16 ALL ADJUST

 Auto Adjust Complete
```

```
A17-ALL OK
```

(6) ⇩ Check
(7) ⇩ [SET]
(8) ⇩ Data save

```
*A1F:NV-RAM CONTROL
```

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For Condition NG/Automatic Adjustment Failure

Recheck according to the procedures below when the massage “Condition NG” or “Auto Adjust Failure” is displayed in the adjustment menu (A11 to A17).

(1) Confirm whether the specified alignment tape is used. If the specified alignment tape is not used, execute the automatic adjustment by the specified one.
SR5-1 for 525/60 system, SR5-1P for 625/50 system
When no abnormality is found, the readjustment is completed.
(2) Clean the drum (video heads) according to the “For Condition NG (C11)” in “4-2-4. RF CHECK Mode (C1)”. This operation is not required when the drum has been already cleaned.
(3) When message “Condition NG” or “Auto Adjust Failure” is displayed during execution of menus other than menu A17 or A13, perform the menu A17.
When no abnormality is found, the readjustment is completed.

If the message “Condition NG” is displayed, the possible cause below are considered.

- Servo system adjustment defect or circuit defect
  ⇨ Readjust the servo system. (A00-01 : SERVO ADJUST)
  ⇨ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- RF system adjustment defect
  ⇨ Readjust the RF system. (A1 : RF ADJUST)
- Worn PB head in the drum assembly
  ⇨ After checking the hours meter (H02 : DRUM RUNNING HOURS), replace the upper drum assembly as required. (Refer to the maintenance manual part 2, volume-1.)
- In the tape transport system adjustment defect or component part installation defect
  ⇨ Readjust the tape transport system or reinstall the part. (Refer to the maintenance manual part 2, volume-1.)
- EQ-75 board defect or Drum assembly defect

Or if the message “Auto Adjust Failure” is displayed, the possible above and following cause are considered.

- Brush slip ring assembly defect or its part installation/ connection defect
  ⇨ Replace or reinstall the brush slip ring assembly. (Refer to the maintenance manual part 2, volume-1.)
- Harness (between the EQ-75 board and drum assembly) connection defect

A1F : NV-RAM CONTROL

This menu is used to save the RF adjustment data adjusted in the RF ADJUST mode into the NV-RAM of the RF system. The adjustment data of A30 : EQ VR adjusted in the BETACAM PB ADJUST mode is also saved in this menu.
The current adjustment data can return to the former saved data before adjustment when executing ALL DATA PREVIOUS without saving the adjustment data into the NV-RAM.

CAUTION

Do not save the adjustment data into the NV-RAM when abnormality is found during automatic adjustment (when the message “Auto Adjust Failure” or “ Condition NG”is displayed).

Note

When the power is turned off without saving the adjusted data, the adjustment data returns to the former saved data.

To execute the menu

(1) Turn the search dial to set the ✻ mark on the superimposed display as described below.
To save the adjustment data after adjustment:
⇨ “SAVE ALL ADJUST DATA”
To return the adjustment data before adjustment:
⇨ “ALL DATA PREVIOUS”
  - In the time data display area, a message “SAVE ALL ADJUST” or “ALL DATA PREVIOU” will be displayed, respectively.

(2) Press the SET button once.
  - On pressing it, the data transmission is initiated.
  - On the superimposed display, a message “Saving ...” or “Loading ...” will be displayed.
    In the time data display area, a message “SAVING” or “LOADING” will be displayed.

(3) Check to see that the data transmission is completed.
  - On completing the data transmission:
    On the superimposed display, a message “Save Complete.” or “Load Complete” will be displayed.
    In the time data display area, a message “SAVING” or “LOADING” will be displayed.

(4) To exit the menu, press the MENU button once.

Example of display and operation
(In data save)

Superimposed display

```
    RF ADJUST MODE
 A1F:NV-RAM CONTROL

*NO OPERATION
 SAVE ALL ADJUST DATA
 ALL DATA PREVIOUS
```

Time data display area: NO OPERATION

(1) ⇩ DIAL (↺)

```
    RF ADJUST MODE
 A1F:NV-RAM CONTROL

 NO OPERATION
*SAVE ALL ADJUST DATA
 ALL DATA PREVIOU
```

SAVE ALL ADJUST

(2) ⇩ SET

```
    RF ADJUST MODE
 A1F:NV-RAM CONTROL

 Saving ..
```

SAVING

⇩

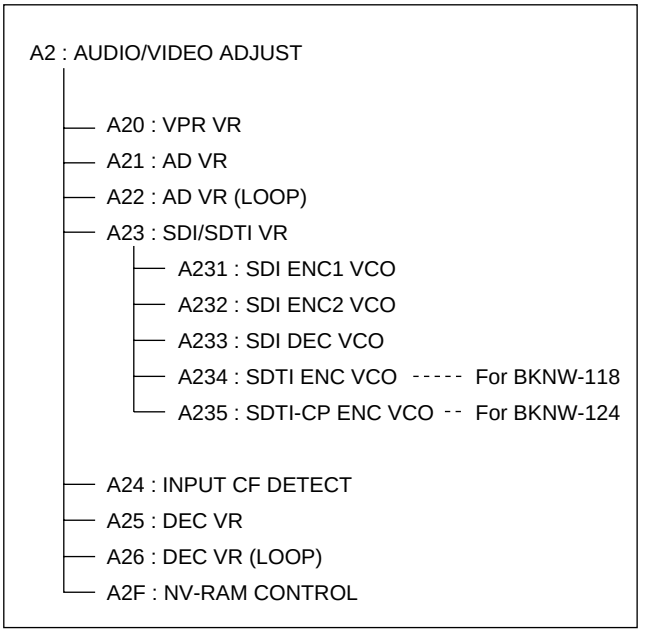
```
    RF ADJUST MODE
 A1F:NV-RAM CONTROL

 Save Complete
```

SAVE COMPLETE

(3) ⇩ Check
(4) ⇩ MENU

4-2-10. AUDIO/VIDEO ADJUST Mode (A2)

The A2 : AUDIO/VIDEO ADJUST mode is used to adjust the audio and video systems.
This unit has eight menus.
In an A23 : SDI/SDTI VR menu, five submenus (including the submenu displayed when the option is installed) are available.


A2 : AUDIO/VIDEO ADJUST
A20 : VPR VR
A21 : AD VR
A22 : AD VR (LOOP)
A23 : SDI/SDTI VR
A231 : SDI ENC1 VCO
A232 : SDI ENC2 VCO
A233 : SDI DEC VCO
A234 : SDTI ENC VCO ----- For BKNW-118
A235 : SDTI-CP ENC VCO -- For BKNW-124
A24 : INPUT CF DETECT
A25 : DEC VR
A26 : DEC VR (LOOP)
A2F : NV-RAM CONTROL

Menu Tree of Audio/Video Systems Adjustment Mode

CAUTION

Do not change the adjustment data carelessly. This may cause a trouble. For the actual adjustment, refer to the adjustment method described in the maintenance manual part 2, volume-1.
If you have changed the adjustment data carelessly, execute ALL DATA PREVIOUS in A2F : NV-RAM CONTROL menu or turn off the power of this unit without selecting A2F : NV-RAM CONTROL menu.
Never execute SAVE ALL ADJUST DATA.

The adjustment menus other than the submenus of A23 and menu A24 are used for manual adjustment.
In the submenus of A23 and menu A24, automatic adjustment (AUTO) or manual adjustment (MANUAL) can be selected.
For the automatic adjustment, refer to the operation example described in each menu.

To change the adjustment data manually

(1) When seeing on the superimposed display, turn the search dial to set the ∗ mark to the item to be adjusted. When seeing in the time data display area, turn the search dial to display the item to be adjusted.
(2) To increase or decrease the adjustment data, turn the search dial while pressing the JOG button.

To execute the automatic adjustment

(1) When seeing on the superimposed display, turn the search dial to set the ∗ mark to "MANUAL". When seeing in the time data display area, turn the search dial to display "MANUAL".
(2) Turn the search dial in FORWARD (↻) direction while pressing the JOG button to display a message "Auto (Push SET Button)" on the superimposed display or a message "PUSH SET" in the time data display area.
(3) Press the SET button once to initiate the automatic adjustment.
    - Only the display on the superimposed display changes as described below. The displayed data value also changes.
      Auto adjusting .. : Automatic adjustment is in progress.
      Auto Adjust Complete : Automatic adjustment is completed.
      Auto Adjust Failure : Automatic adjustment fails.

To return the adjustment data to the former state

Execute ALL DATA PREVIOUS in A2F : NV-RAM CONTROL menu.

Note

The current adjustment data can not return to the former saved data after executing SAVE ALL DATA ADJUST DATA.

To save the adjustment data

Execute SAVE ALL ADJUST DATA in A2F : NV-RAM CONTROL menu.

A20 : VPR VR

```
AUDIO/VIDEO ADJUST MODE
A20:VPR VR

*REF 1ST FLD DET      80
 VIDEO 1/2 LEVEL      80
 VIDEO 3 LEVEL        80
 Y OUTPUT LEVEL       80
 R-Y OUTPUT LEVEL     80
 B-Y OUTPUT LEVEL     80
 B-CAM R-Y OUT LEVEL  80
 B-CAM B-Y OUT LEVEL  80
 INT 4FSC FREQ        80
```

In 525/60 System

```
AUDIO/VIDEO ADJUST MODE
A20:VPR VR

*REF 1ST FLD DET      80
 VIDEO 1/2 LEVEL      80
 VIDEO 3 LEVEL        80
 Y OUTPUT LEVEL       80
 R-Y OUTPUT LEVEL     80
 B-Y OUTPUT LEVEL     80
 INT 4FSC FREQ        80
```

In 625/50 System

This menu is used to adjust the reference signal and analog video output systems on the VPR-47 board. In 525/60 and 625/50 systems, the displayed adjustment items differ.

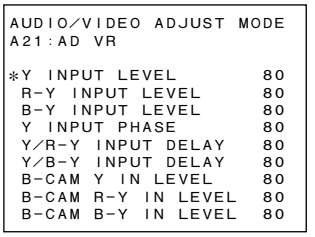
The adjustment item below must be adjusted in both 525/60 and 625/50 systems.

Adjustment item	Description
REF 1ST FLD DET	First-field detection timing of reference signal
VIDEO 1/2 LEVEL	Composite video output (1/2) level
VIDEO 3 LEVEL	Composite video output (3) level
Y OUTPUT LEVEL	Component video Y output level
R-Y OUTPUT LEVEL	Component video R-Y output level
B-Y OUTPUT LEVEL	Component video B-Y output level
INT 4FSC FREQ	Free-running frequency of internal reference signal 4fsc

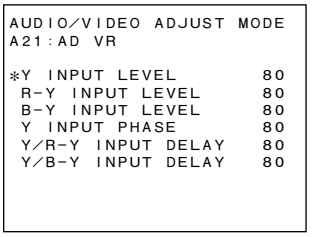
The adjustment item below is used exclusively for the 525/60 system.

Adjustment item	Description
B-CAM R-Y OUT LEVEL	R-Y output (Betacam) level
B-CAM B-Y OUT LEVEL	B-Y output (Betacam) level

A21 : AD VR


AUDIO/VIDEO ADJUST MODE
A21:AD VR
*Y INPUT LEVEL 80
R-Y INPUT LEVEL 80
B-Y INPUT LEVEL 80
Y INPUT PHASE 80
Y/R-Y INPUT DELAY 80
Y/B-Y INPUT DELAY 80
B-CAM Y IN LEVEL 80
B-CAM R-Y IN LEVEL 80
B-CAM B-Y IN LEVEL 80

In 525/60 System



In 625/50 System

This menu is used to adjust the analog component video input system on the DEC-110 board. In 525/60 and 625/50 systems, the displayed adjustment items differ.

The adjustment item below is adjusted in either of the 525/60 or 625/50 system.

Adjustment item	Description
Y INPUT LEVEL	Y input level
R-Y INPUT LEVEL	R-Y input level
B-Y INPUT LEVEL	B-Y input level
Y INPUT PHASE	Y input phase
Y/R-Y INPUT DELAY	R-Y input delay compensation
Y/B-Y INPUT DELAY	B-Y input delay compensation

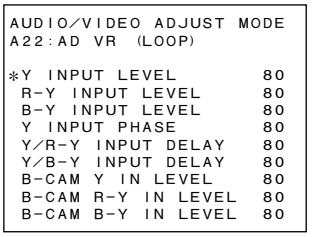
The adjustment item below is used exclusively for the 525/60 system.

Adjustment item	Description
B-CAM Y IN LEVEL	Y input (Betacam) level
B-CAM R-Y IN LEVEL	R-Y input (Betacam) level
B-CAM B-Y IN LEVEL	B-Y input (Betacam) level

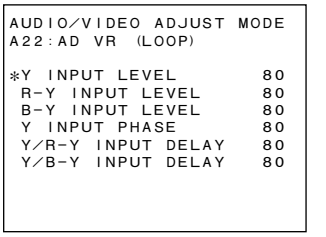
Note

The adjustment data in A21 : AD VR menu is used in common with A22 : AD VR (LOOP) menu.

A22 : AD VR (LOOP)


AUDIO/VIDEO ADJUST MODE
A22:AD VR (LOOP)
*Y INPUT LEVEL 80
R-Y INPUT LEVEL 80
B-Y INPUT LEVEL 80
Y INPUT PHASE 80
Y/R-Y INPUT DELAY 80
Y/B-Y INPUT DELAY 80
B-CAM Y IN LEVEL 80
B-CAM R-Y IN LEVEL 80
B-CAM B-Y IN LEVEL 80

In 525/60 System



In 625/50 System

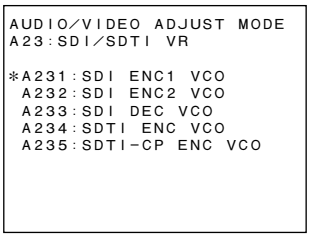
In this menu, the most suitable signal for adjustment is output from an internal video test signal generator (refer to the table below), and the component video input system can be adjusted with the multi-loop function activated. The adjustment item is the same as for A21: AD VR.

Adjustment item	Test signal
Y INPUT LEVEL R-Y INPUT LEVEL B-Y INPUT LEVEL	100% Color Bars
Y INPUT PHASE	NTC7 (NTSC): 525/60 system Line330 (625): 625/50 system
Y/R-Y INPUT DELAY Y/B-Y INPUT DELAY	Bowtie
B-CAM Y IN LEVEL B-CAM R-Y IN LEVEL B-CAM B-Y IN LEVEL	75% Color Bars

Note

The adjustment data in A22 : AD VR (LOOP) menu is used in common with A21 : AD VR menu.

A23 : SDI/SDTI VR



This menu is used to adjust the VCO free-running frequency of SDI and SDTI input/output interfaces.
Five submenus (including for option) are available.
Automatic or manual adjustment can be selected.

Note

The menu title of A23 may be displayed as “SDI VR”.

A231 : SDI ENC1 VCO

This submenu is used for an SDI output interface (SDI encoder).

A232 : SDI ENC2 VCO

This submenu is used for an SDI output interface (SDI encoder) with superimpose function.

A233 : SDI DEC VCO

This submenu is used for an SDI input interface (SDI decoder).

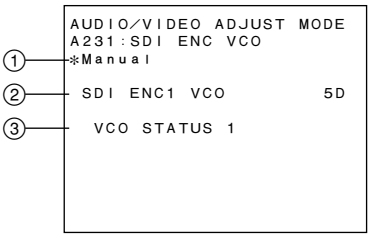
A234 : SDTI ENC VCO

This submenu is used for an SDTI (SX) output interface (SDTI (SX) encoder). This submenu is displayed when the BKNW-118 option is installed.

A235 : SDTI-CP ENC VCO

This submenu is used for an SDTI-CP output interface (SDTI-CP encoder). This submenu is displayed when the BKNW-124 option is installed.

Description of superimposed display



Ex.: A231 : SDI ENC1 VCO

① The adjustment mode (manual and automatic) or the messages during automatic adjustment are displayed in this line.

Manual :	Adjustment mode is set to the manual adjustment.
Auto (Push SET Button) :	Press the SET button to initiate the automatic adjustment.
Auto Adjusting ... :	Automatic adjustment is in progress.
Auto Adjust Complete :	Automatic adjustment is completed.
Auto Adjust Failure :	Automatic adjustment fails.

Note

The adjustment data can be manually changed even if message “Auto (Push SET Button)” is displayed.

② The adjustment item and adjustment data value are displayed in this line.

③ The VCO status will be displayed as “0” or “1”.

Change of adjustment mode

The relation between the adjustment mode and display is shown in the table below.

Adj. mode	Superimposed display	Time data display area
Manual adjustment	Manual	MANUAL
Automatically adjustable	Auto (Push SET Button)	PUSH SET

(i) Turn the search dial in REVERSE (↺) direction to set the ∗ mark to line ① on the superimposed display. (In a time data display area, “MANUAL” or “PUSH SET” will be displayed.)

(ii) Turn the search dial while pressing the JOG button.
Manual ⇨ Automatic: JOG + DIAL (↻)
Manual ⇦ Automatic: JOG + DIAL (↺)

To execute the automatic adjustment

(1) Display “Auto (Push SET Button)” on the superimposed display or “PUSH SET” in the time data display area according to the “Change of adjustment mode” described above.

(2) Press the SET button to initiate the automatic adjustment.
- The superimposed display changes to “Auto Adjusting...”. The displayed data value also changes. The display in the time data display area does not change.

(3) Check to see that the automatic adjustment is completed on the superimposed display.
- On completing it, the message “Auto Adjust Complete” will be displayed.

Note

If the message “Auto Adjust Failure” is displayed, refer to the “When failing the automatic adjustment” below.

(4) To exit the menu, press the MENU button once. To execute the automatic adjustment again in this menu, go to step (2).

(5) To save the adjustment data into the NV-RAM, execute SAVE ALL ADJUST DATA in A2F : NV-RAM CONTROL menu. To return the adjustment data to the former saved data before adjustment, execute ALL DATA PREVIOUS in A2F : NV-RAM CONTROL menu.

When failing the automatic adjustment

The following circuit board is considered to be defective.

Submenu No.	Circuit board name	Remarks
A231 or A232	SDI-41 board	
A233	SDI-41 board	
A234	DPR-119 board (or SDI-41 board)	BKNW-118
A235	DPR-150 (or DIF-109) board	BKNW-124

Note on manual adjustment

Measuring equipment are required in performing the manual adjustment. For the actual manual adjustment, refer to the adjustment method described in Section 2 of the maintenance manual part 2, volume-1.

Note

For the data changing, refer to the “To change the adjustment data manually” on page 4-67.

Example of display and operation

Example of A231 : SDI ENC1 VCO

Superimposed display / Time data display area

```
AUDIO/VIDEO ADJUST MODE
A231:SDI ENC1 VCO
*Manual

 SDI ENC1 VCO          74

  VCO STATUS 0
```
MANUAL

(1) ⇩ JOG + DIAL (↺)

```
AUDIO/VIDEO ADJUST MODE
A231:SDI ENC1 VCO
*Auto  (Push SET button)

 SDI ENC1 VCO          74

  VCO STATUS 0
```
PUSH SET

(2) ⇩ SET

```
AUDIO/VIDEO ADJUST MODE
A231:SDI ENC1 VCO
*Auto Adjusting ...

 SDI ENC1 VCO          00

  VCO STATUS 0
```
PUSH SET

⇩

(omitted)

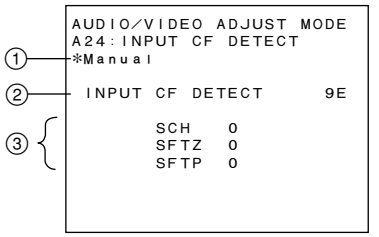
⇩

```
AUDIO/VIDEO ADJUST MODE
A231:SDI ENC1 VCO
*Auto Adjust Complete

 SDI ENC1 VCO          5C

  VCO STATUS 1
```
PUSH SET

(3) ⇩ Check
(4) ⇩ MENU
(5) ⇩ MENU
⇩ Data save

```
*A2F:NV-RAM CONTROL
```

A24 : INPUT CF DETECT



This menu is used to adjust the color frame detection timing of a composite video input signal.
Preparation (refer to Section 2 in the maintenance manual part 2, volume-1) is required for the adjustment.

Description of superimposed display

① The adjustment mode (manual and automatic) or the messages during automatic adjustment are displayed in this line.

Manual :	Adjustment mode is set to the manual adjustment.
Auto (Push SET Button):	Press the SET button to initiate the automatic adjustment.
Auto Adjusting ... :	Automatic adjustment is in progress.
Auto Adjust Complete :	Automatic adjustment is completed.
Auto Adjust Failure :	Automatic adjustment fails.

Note

The adjustment data can be manually changed even if message “Auto (Push SET Button)” is displayed.

② The adjustment item and adjustment data value are displayed in this line.

③ Each status will be displayed as “0” or “1”.
0: When the specification is not satisfied
1: When the specification is satisfied
(For SFTP, the status is displayed in alternate “0” and “1” when the specification is satisfied.)

Change of adjustment mode

The relation between the adjustment mode and display is shown in the table below.

Adj. mode	Superimposed display	Time data display area
Manual adjustment	Manual	MANUAL
Automatically adjustable	Auto (Push SET Button)	PUSH SET

(i) Turn the search dial in REVERSE (↺) direction to set the ∗ mark to line ① on the superimposed display. (In a time data display area, “MANUAL” or “PUSH SET” will be displayed.)
(ii) Turn the search dial while pressing the JOG button.
Manual ⇨ Automatic: JOG + DIAL (↺)
Manual ⇦ Automatic: JOG + DIAL (↺)

To execute the automatic adjustment

(1) Display “Auto (Push SET Button)” on the superimposed display or “PUSH SET” in the time data display area according to the “Change of adjustment mode” described above.
(2) Press the SET button to initiate the automatic adjustment.
- The superimposed display changes to “Auto Adjusting...”. The displayed data value also changes. The display in the time data display area does not change.

(3) Check to see that the automatic adjustment is completed on the superimposed display.
- On completing it, the message “Auto Adjust Complete” will be displayed.
  Status for SCH and SFTZ are displayed as “1”.
  For SFTP is displayed in alternate “0” and “1”.

Note

If the message “Auto Adjust Failure” is displayed, refer to the “When failing the automatic adjustment” below.

(4) To exit the menu, press the MENU button once.
To execute the automatic adjustment again in this menu, go to step (2).
(5) To save the adjustment data into the NV-RAM, execute SAVE ALL ADJUST DATA in A2F : NV-RAM CONTROL menu.
To return the adjustment data to the former saved data before adjustment, execute ALL DATA PREVIOUS in A2F : NV-RAM CONTROL menu.

Note on manual adjustment

Check the adjustment data range in which the SCH status is set to “1” and set the adjustment data to the intermediate value in performing the manual adjustment.

Note

For the manual adjustment, refer to the “To change the adjustment data manually” on page 4-67.

Example of display and operation

Superimposed display

```
AUDIO/VIDEO ADJUST MODE
A24:INPUT CF DETECT
*Manual

 INPUT CF DETECT     9E

       SCH   0
       SFTZ  0
       SFTP  0
```

Time data display area

```
MANUAL
```

(1) ⇩ JOG + DIAL(↻)

```
AUDIO/VIDEO ADJUST MODE
A24:INPUT CF DETECT
*Auto (Push SET button)

 INPUT CF DETECT     9E

       SCH   0
       SFTZ  0
       SFTP  0
```

```
PUSH SET
```

(2) ⇩ SET

```
AUDIO/VIDEO ADJUST MODE
A24:INPUT CF DETECT
*Auto Adjusting ...

 INPUT CF DETECT     00

       SCH   0
       SFTZ  0
       SFTP  0
```

```
PUSH SET
```

⇩

(omitted)

⇩

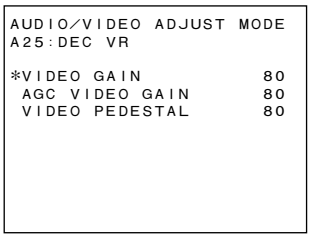
```
AUDIO/VIDEO ADJUST MODE
A24:INPUT CF DETECT
*Auto Adjust Complete

 INPUT CF DETECT     85

       SCH   1
       SFTZ  1
       SFTP  0
```

```
PUSH SET
```

(3) ⇩ Check
(4) ⇩ MENU
(5) ⇩ MENU
⇩ Data save

```
*A2F:NV-RAM CONTROL
```

A25 : DEC VR



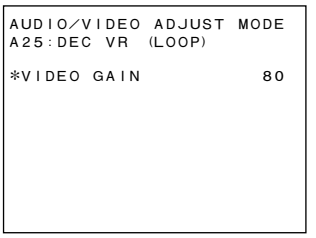
This menu is used to adjust the composite video input system on the DEC-110 board.

Adjustment item	Description
VIDEO GAIN	Composite video input level (During AGC OFF setting)
AGC VIDEO GAIN	Composite video input level (During AGC ON setting)
VIDEO PEDESTAL	Composite video input level pedestal

Note

The adjustment data in A25 : DEC VR menu is used in common with the same adjustment item in A26 : DEC VR (LOOP) menu.

A26 : DEC VR (LOOP)



This menu is used to adjust the composite video input system.
The most suitable signal (refer to the table below) for adjustment is output from an internal video test signal generator, and the composite video input system can be adjusted with the multi-loop function activated.

Adjustment item	Test signal
VIDEO GAIN	100% Color Bars

Note

The adjustment data in A26 : DEC VR (LOOP) menu is used in common with the same adjustment item in A25 : DEC VR menu.

A2F : NV-RAM CONTROL

This menu is used to save the audio/video adjustment data adjusted in the AUDIO/VIDEO ADJUST mode into the NV-RAM.
The current adjustment data can return to the former saved data before adjustment when executing ALL DATA PREVIOUS without saving the adjustment data into the NV-RAM.

Note

When the power is turned off without saving the adjusted data, the adjustment data returns to the former saved data.

To execute the menu

(1) Turn the search dial to set the ∗ mark on the superimposed display as described below.
To save the adjustment data after adjustment:
⇨ "SAVE ALL ADJUST DATA"
To return to the adjustment data before adjustment:
⇨ "ALL DATA PREVIOUS"
- In the time data display area, a message "SAVE ALL ADJUST" or "ALL DATA PREVIOU" will be displayed, respectively.

(2) Press the SET button once.
- On pressing it, the data transmission is initiated.
- On the superimposed display, a message "Saving ..." or "Loading ..." will be displayed.
In the time data display area, a message "SAVING" or "LOADING" will be displayed.

(3) Check to see that the data transmission is completed.
- On completing the data transmission:
On the superimposed display, a message "Save Complete." or "Load Complete" will be displayed.
In the time data display area, a message "SAVING" or "LOADING" will be displayed.

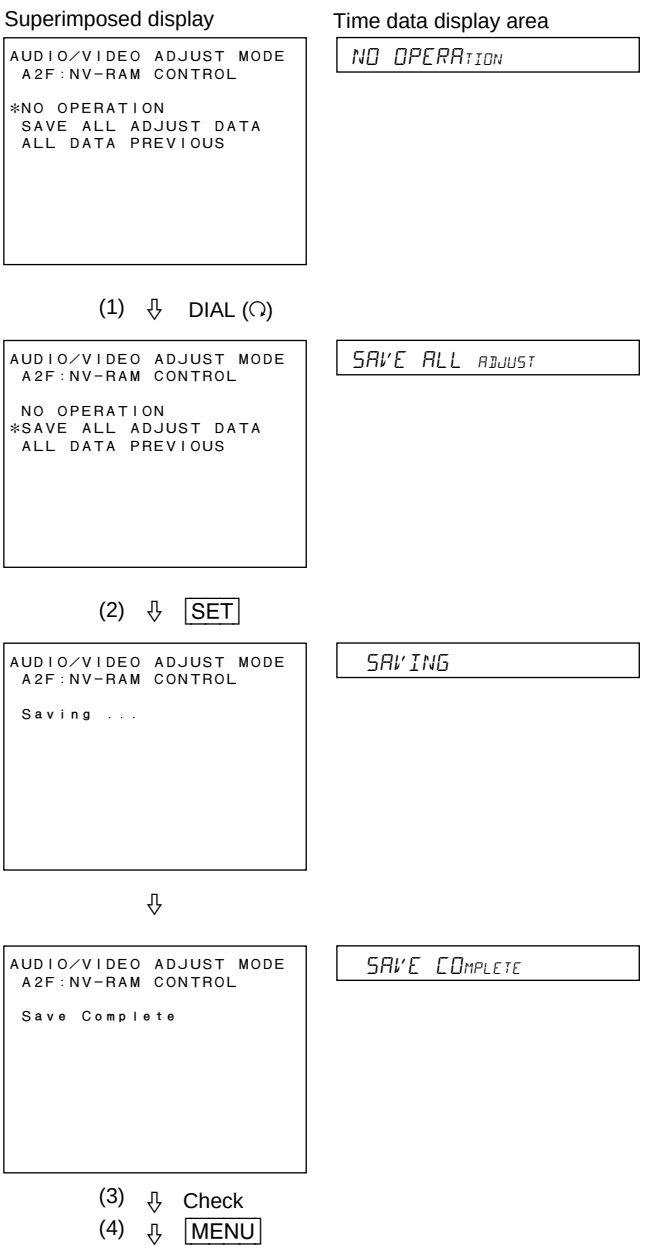
(4) To exit the menu, press the MENU button once.

Example of display and operation

(In data save)

Superimposed display

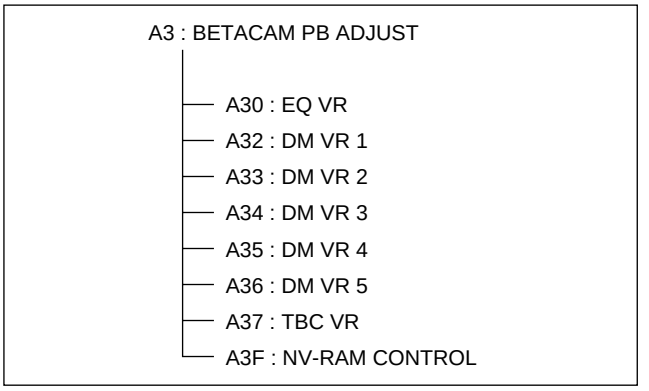
Time data display area



http://getMANUAL.com

4-2-11. BETACAM PB ADJUST Mode (A3)

The A3 : BETACAM PB ADJUST mode is used to adjust the PB system based on a Betacam/Betacam SP format. This mode contains the eight menus below.



Menu Tree of BETACAM PB Adjustment Mode

CAUTION

Do not change the adjustment data carelessly. This may cause a trouble. For the actual adjustment, refer to the adjustment method described in the maintenance manual part 2, volume-1.
If you have changed the adjustment data carelessly, execute ALL DATA PREVIOUS in A3F : NV-RAM CONTROL menu or turn off the power of this unit without selecting A3F : NV-RAM CONTROL menu.
Never execute SAVE ALL ADJUST DATA.

Note

DNW-A75's Betacam/Betacam SP PB function is for the NTSC (525/60) system. But the PAL (625/50) system can be simple playback.
DNW-A75P's Betacam/Betacam SP PB function is for the PAL (625/50) system. But the NTSC (525/60) system can be simple playback.

To change the adjustment data manually

(1) When seeing on the superimposed display, turn the search dial to set the ∗ mark to the item to be adjusted. When seeing in the time data display area, turn the search dial to display the item to be adjusted.
(2) To increase or decrease the adjustment data, turn the search dial while pressing the JOG button.

To return the adjustment data to the former state

Execute ALL DATA PREVIOUS in A3F : NV-RAM CONTROL menu.

Note

The current adjustment data can not return to the former state after executing SAVE ALL DATA ADJUST DATA.

To save the adjustment data

Execute SAVE ALL ADJUST DATA in A3F : NV-RAM CONTROL menu.

Note

In a time data display area, the adjustment item name on the superimpose picture is omitted during display as follows:

RF GAIN ⇨ GAIN
GUARD BAND ⇨ GUARD
METAL ⇨ M
OXIDE ⇨ O

A30 : EQ VR

```
BETACAM PB ADJUST MODE
A30:EQ VR

*RF GAIN METAL-Y-A   58
 RF GAIN METAL-Y-B   59
 RF GAIN METAL-C-A   48
 RF GAIN METAL-C-B   4D
 RF GAIN OXIDE-Y-A   72
 RF GAIN OXIDE-Y-B   75
 RF GAIN OXIDE-C-A   5A
 RF GAIN OXIDE-C-B   5C
```

This menu is used to adjust the gain of a PB RF amplifier (on the EQ-75 board) based on the Betacam/Betacam SP format.
There are adjustment data for metal and oxide tapes. Each adjustment data is provided proportionally to the number of heads (Y-A, Y-B, C-A, and C-B).

A32 : DM VR 1

```
BETACAM PB ADJUST MODE
A32:DM VR 1

*EQ1 METAL-Y-A        7F
 EQ1 METAL-Y-B        81
 EQ1 METAL-C-A        77
 EQ1 METAL-C-B        81
 EQ1 OXIDE-Y-A        AD
 EQ1 OXIDE-Y-B        AF
 EQ1 OXIDE-C-A        94
 EQ1 OXIDE-C-B        9D
```

This menu is used to adjust the frequency characteristics of a primary cosine equalizer (on the DM-89 board).
There are adjustment data for metal and oxide tapes.
Each adjustment data is provided proportionally to the number of heads (Y-A, Y-B, C-A, and C-B).

A33 : DM VR 2

```
BETACAM PB ADJUST MODE
A33:DM VR 2

*MAIN METAL-Y-A       BC
 MAIN METAL-Y-B       BC
 MAIN METAL-C-A       91
 MAIN METAL-C-B       91
 MAIN OXIDE-Y-A       A8
 MAIN OXIDE-Y-B       A8
 MAIN OXIDE-C-A       A0
 MAIN OXIDE-C-B       A0
```

This menu is used to adjust the frequency characteristics of a secondary cosine equalizer (main)(on the DM-89 board).
There are adjustment data for metal and oxide tapes.
Each adjustment data is provided proportionally to the number of heads (Y-A, Y-B, C-A, and C-B).

A34 : DM VR 3

```
BETACAM PB ADJUST MODE
A34:DM VR 3

*SUB METAL-Y-A        A4
 SUB METAL-Y-B        A4
 SUB METAL-C-A        70
 SUB METAL-C-B        70
 SUB OXIDE-Y-A        B6
 SUB OXIDE-Y-B        B6
 SUB OXIDE-C-A        AA
 SUB OXIDE-C-B        AA
```

This menu is used to adjust the frequency characteristics of a secondary cosine equalizer (sub)(on the DM-89 board).
There are adjustment data for metal and oxide tapes. Each adjustment data is provided proportionally to the number of heads (Y-A, Y-B, C-A, and C-B).

A35 : DM VR 4

```
BETACAM PB ADJUST MODE
A35:DM VR 4

*GUARD BAND METAL-Y   22
 GUARD BAND METAL-C   1A
 GUARD BAND OXIDE-Y   26
 GUARD BAND OXIDE-C   2F
 OMC DC METAL-Y       E4
 OMC DC METAL-C       D0
 OMC DC OXIDE-Y       D0
 OMC DC OXIDE-C       D0
```

This menu is used to adjust the guard band width and to set the DC offset level of an over-modulation compensation circuit (on the DM-89 board).
There are adjustment data for metal and oxide tapes. Each adjustment data is provided proportionally to the number of video channels (Y and C).

A36 : DM VR 5

```
BETACAM PB ADJUST MODE
A36:DM VR 5

*DO TH METAL-Y        1A
 DO TH METAL-C        12
 DO TH OXIDE-Y        2E
 DO TH OXIDE-C        27
 ENV-TH-H             20
 ENV-TH-L             10
```

This menu is used to adjust each dropout threshold level of Y and C channels and to set the RF envelope threshold level.
There are adjustment data for metal and oxide tapes provided for each dropout threshold level.
There are adjustment data for high (H) and low (L) limits provided for the RF envelope threshold level.

A37 : TBC VR

```
BETACAM PB ADJUST MODE
A37:TBC VR

*SQ-Y RZ              4B
 SQ-C RZ              6F
 VISC PHASE           06
```

This menu is used to set each read clock timing of Y and C channels and to set the data of a PB VISC phase detection circuit (on the TBC-23A board).

A3F : NV-RAM CONTROL

This menu is used to save the Betacam PB adjustment data adjusted in the BETACAM PB ADJUST mode into the NV-RAM.
The current adjustment data can return to the former saved data before adjustment when executing “ALL DATA PREVIOUS” without saving the adjustment data into the NV-RAM.

Note

When the power is turned off without saving the adjusted data, the adjustment data returns to the former saved data.

To execute the menu

(1) Turn the search dial to set the ∗ mark on the superimposed display as described below.
To save the adjustment data after adjustment:
⇨ “SAVE ALL ADJUST DATA”
To return to the adjustment data before adjustment:
⇨ “ALL DATA PREVIOUS”
- In the time data display area, a message “SAVE ALL ADJUST” or “ALL DATA PREVIOU” will be displayed, respectively.

(2) Press the SET button once.
- On pressing it, the data transmission is initiated.
- On the superimposed display, a message “Saving ...” or “Loading ...” will be displayed.
In the time data display area, a message “SAVING” or “LOADING” will be displayed.

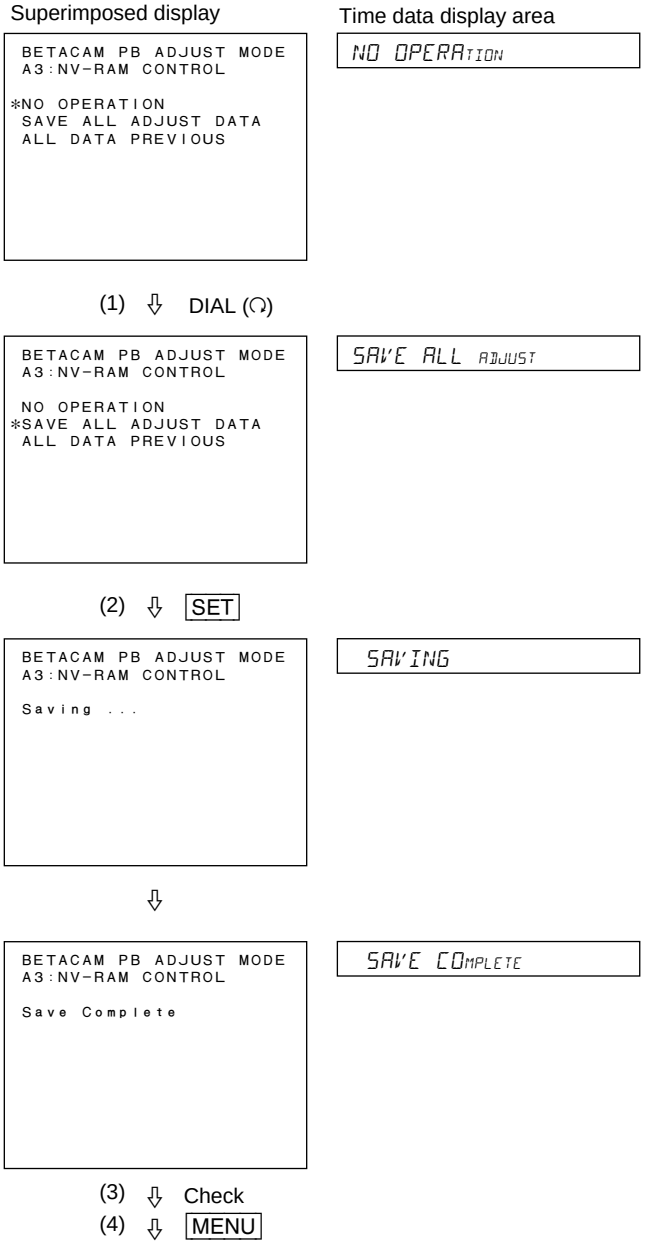
(3) Check to see that the data transmission is completed.
- On completing the data transmission:
On the superimposed display, a message “Save Complete.” or “Load Complete” will be displayed.
In the time data display area, a message “SAVING” or “LOADING” will be displayed.

(4) To exit the menu, press the MENU button once.

Example of display and operation

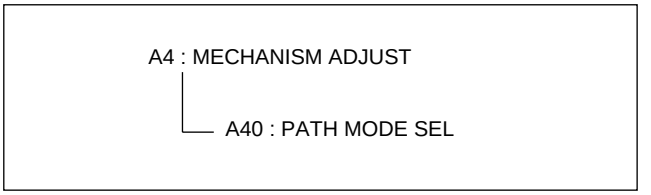
(In data save)

Superimposed display / Time data display area



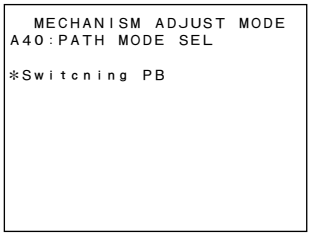
4-2-12. MECHANISM ADJUST Mode (A4)

The A4 : MECHANISM ADJUST mode is used to adjust the mechanism. This mode contains the one menu below.



Menu Tree of MECHANISM Adjustment Mode

A40 : PATH MODE SEL



This menu sets the PB mode for confirming and adjusting video tracking. Switching PB and full PB modes are available for setting.
A PB signal is output to the test point (TP106) on the SS-83 board by the REC head when the tape is played back with this menu opened. (The signal output from this test point becomes an envelope waveform.)
In the switching PB mode, only the data area (helical track) based on an SX format is played back.
In the full PB mode, the overlap portion before and behind the data area based on an SX format is played back.
The switching PB mode is always set when the menu is opened.

PB mode setting

To set the PB mode, turn the search dial while pressing the JOG button and display the desired setting.

Menu operation

A white square is displayed in the upper-right position of the superimposed display when the SET button is pressed after the switching PB and full PB modes are set. The unit then enters the ordinary operation state (in which the ordinary operation of this unit except a menu system can be performed.)
In this state, play back the specified alignment tape, and confirm and adjust the video tracking.
However, character information (time code or operation status) superimposed during ordinary operation is not displayed.
To return to the former state, press the MENU button.

Note

For the video tracking confirmation and adjustment, refer to “4-1-3. Video Tracking Confirmation and Adjustment” in the maintenance manual part 2, volume-1.

4-3. Error Logger Display Mode (M2)

4-3-1. Outline

This unit has an error log function that records the error generated or detected in this unit.
The error logger display mode is used to superimpose the contents (data) of the error log on the video monitor. The ordinary display mode (refer to Section 4-3-2) and the setting mode (refer to Section 4-3-3) that displays the menu to limit the error log display are available in this unit.
The calendar/clock date incorporated into this unit can be set in the setting mode.

Activation and Termination

The two methods below are used to activate the error logger display mode. To terminate the error logger display mode, press the MENU button in the display mode. It returns to the operation state before activation when the error logger display mode is terminated.

A. Select an M2 : ERROR LOGGER menu in the maintenance mode.
B. Press the MENU button while pressing the ENTRY button on the lower control panel during ordinary operation.

Error Log

The recorded error log is classified into three categories: TAPE ERROR, WARNING, and CONDITION. (The error log belongs to the three types.)
Each log is constituted by a message, error generation date, and time code.
The message varies depending on the type of a log.
The error generation date is the date based on the calendar and clock of this unit. (The year is omitted.)
The time code records the time code (LTC) data of the VTR side which is stored in this unit at the error occurs.

The maximum number of stored log is 300. If the number of log exceeds 300, the contents of oldest error log is erased sequentially.

TAPE ERROR

An error code and error message are recorded as a message when the error (error codes 01 to 99) related to a VTR and system occurs.
When multiple sub-error messages are displayed, the three sub-error messages from the top are recorded.
For the error message, refer to Section 3.

WARNING

The warning log below is recorded in an error log.

- REFERENCE MISSING
  This message is recorded when no signal is input to the REF VIDEO (reference video signal) connector after the power is turned on.

CONDITION

The condition logs below are recorded in an error log.

- VIDEO PB CONDITION RED
  This message is recorded when the channel condition becomes red during video PB operation.
- AUDIO PB CONDITION RED
  This message is recorded when the channel condition becomes red during audio PB operation.

4-3-2. Display Mode

The operation in the ordinary display mode is described based on a display example on the superimposed display. The log number/total log count is displayed in the second line. "(001/000)" is displayed when no log exists.
The third to tenth lines (eight lines) are the area where logs are displayed. The three-digit number on the left indicates the log number. The contents of a log are displayed on its right.
A calendar/clock is displayed on the lowest line.

Notes

- The top screen on the right is the example displayed when the error logger mode is first activated after the power is turned on. The second-time or later screen is displayed with the preceding display completed.
- In a time data display area, only the log number/total log count (e.g., "ERR LOG 001/003") is displayed.

Search dial (JOG mode)

To display the log number not displayed on the screen, turn the search dial and move an ∗ mark.

CTL/TC/UB button

On this screen, the whole message is displayed partially. To display other information (date and time code), press the CTL/TC/UB button.

F FWD button

The whole contents of a log to which the ∗ mark was set are displayed while the F FWD button is pressed.
The category (error code for TAPE ERROR) of an error log is displayed in the third line. Messages are displayed in the fourth and fifth lines, and sub-error messages in the sixth to eighth lines. The date (not including the year) is displayed in the ninth line, and time code in the tenth line.
Other logs can be displayed in this display state when the search dial is turned with the F FWD button pressed.

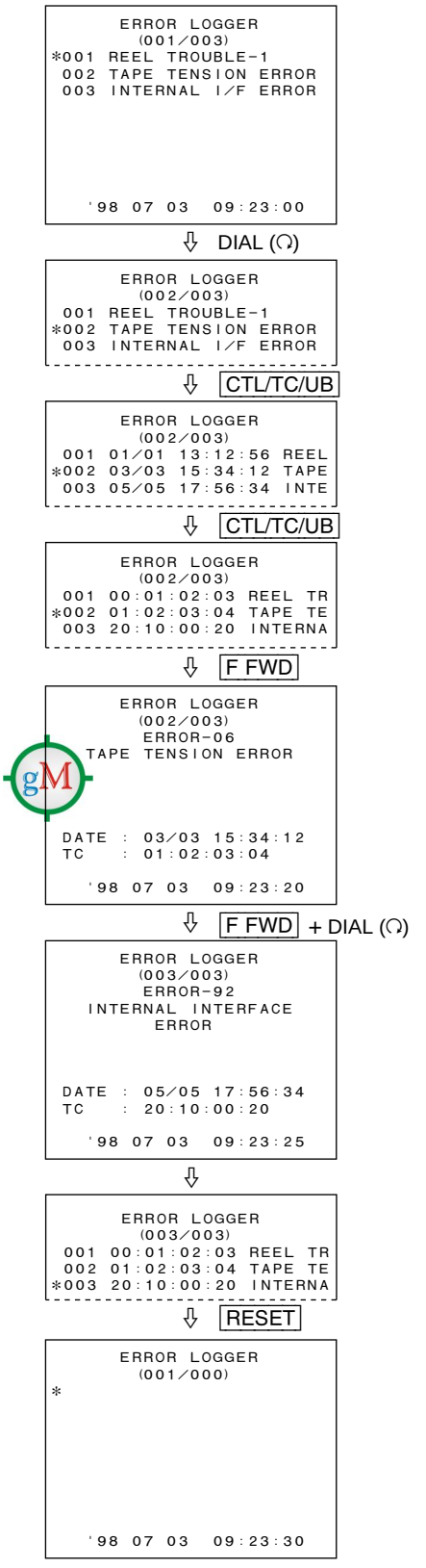
RESET button

The recorded all logs are erased when the RESET button is pressed.

Note

Usually, do not erase any log.
There may be some error logs that are useful for confirmation of the progress when a trouble occurs or that are important in preventing a trouble from occurrence.

Example of display and operation



SET button

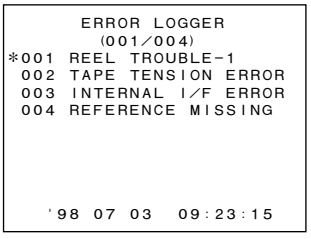
A white square mark is displayed in the upper-right position of the superimposed display when the SET button is pressed. The unit then enters the normal operation state (in which the normal operation of this unit except a menu system can be performed).
However, the character information (time code or operation status) superimposed during normal operation is not displayed in this case.
To return to the former state, press the MENU button.

MENU button

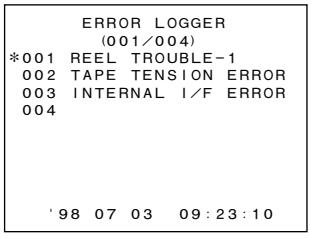
The display returns to the error logger display mode when the MENU button is pressed with the white square displayed in the upper-right position of the superimposed display.
Pressing the MENU button in the error logger display mode terminates the error logger display mode.

Limited-display screen

For the error log of a category that is set to OFF in the menu of setting mode (refer to Section 4-3-3), information items other than a log number are not displayed. However, the whole display using the F FWD button is not influenced by the setting.

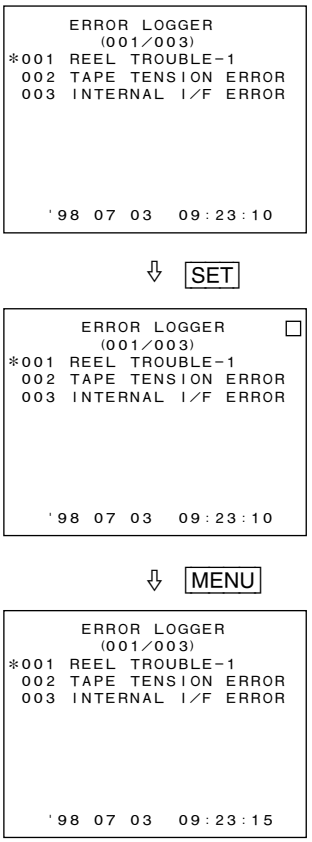


Ordinary Screen (No limited-display)



Only Warning Turned Off

Example of display and operation



4-3-3. Setting Mode

The setting mode is used to display a menu that limits the display of an error log. In this menu, the display can be turned on and off for each error log category. A calendar/clock can also be set in this menu.

Notes

- The top and second screens on the right are the examples displayed when the error logger mode and setting mode are first activated after the power is turned on. The second-time or later screen is displayed with the preceding display completed.
- A white square mark is displayed in the upper-right position of the superimposed display as in the display mode when the SET button is pressed in the setting mode (except when "Push SET Button" is displayed during calendar/clock setting). The unit then enters the normal operation state (in which the normal operation of this unit except a menu system can be performed). The former state is returned when the MENU button is pressed.

Entering the setting mode

Press the SET button while pressing the STOP button in the display mode.

Returning to the display mode

Press the SET button again while pressing the STOP button or press the MENU button.

Setting menu

The seventh to tenth lines on the superimposed display are a setting menu. The display in the display mode is left in the first to fifth lines.
Each setting when the power is turned on is all ON.
The error log belonging to a category is limited in display when each item is set to OFF. (Refer to the "Limited-display screen" on the previous page.)
The changed setting is valid until the power is turned off.
How to change the setting is described below.

(1) Turn the search dial to set the ∗ mark to the category to be changed in setting.

Notes

- In the time data display area, the contents of the ∗-marked line are displayed on the superimposed display.
- Turn the search dial continuously in FORWARD (↻) direction for the calendar/clock setting. (Refer to the next page.)

(2) To change the setting, turn the search dial while pressing the JOG button.
ON ⇨ OFF: REVERSE (↺) direction
OFF ⇨ ON: FORWARD (↻) direction

(3) To change the setting of other categories, repeat steps (1) and (2).

(4) To finish the setting mode, press the MENU button once.

Example of display and operation

Display mode

```
      ERROR LOGGER
        (001/003)
*001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR




   '98 07 03  09:23:15
```

⇩ STOP + SET

Setting mode

```
      ERROR LOGGER
        (001/003)
 001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR
------------------------
*TAPE ERROR          ON
 WARNING             ON
 CONDITION           ON


   '98 07 03  09:23:17
```

⇩ DIAL(↻)

```
      ERROR LOGGER
        (001/003)
 001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR
------------------------
 TAPE ERROR           ON
*WARNING              ON
 CONDITION           ON


   '98 07 03  09:23:20
```

⇩ JOG + DIAL(↻)

```
      ERROR LOGGER
        (001/003)
 001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR
------------------------
 TAPE ERROR           ON
*WARNING             OFF
 CONDITION           ON


   '98 07 03  09:23:22
```

⇩ JOG + DIAL(↻)

```
      ERROR LOGGER
        (001/003)
 001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR
------------------------
 TAPE ERROR           ON
*WARNING              ON
 CONDITION           ON


   '98 07 03  09:23:24
```

Calendar/clock setting

The calendar/clock's date and time of this unit can be adjusted in the setting mode as described below.
In a display/operation example on the right, 9:23 of July 3rd in 1998 is set to 15:00 of August 1st in 1998.

(1) Turn the search dial slowly and turn on and off the numerical value (year, month, day, hour, minute, or second) of the calendar/clock item to be changed.

Notes

- When the ∗ mark is displayed in the setting menu, turn the search dial continuously in FORWARD (↻) direction until the numerical value blinks. For the calendar/clock setting, the ∗ mark is not displayed on the superimposed display.
- Do not turn the search dial excessively in REVERSE (↺) direction during setting. The ∗ mark is displayed in the setting menu and the calendar/clock setting is stopped.

(2) Turn the search dial while pressing the JOG button and change the numerical value to the desired one.

Notes

- The count display of seconds stops when the numerical value is changed. The internal data is updated.
- On the superimposed display, a message "Push SET Button" is displayed in the upper line.

(3) Repeat steps (1) and (2) until the numerical values in other items are changed completely.

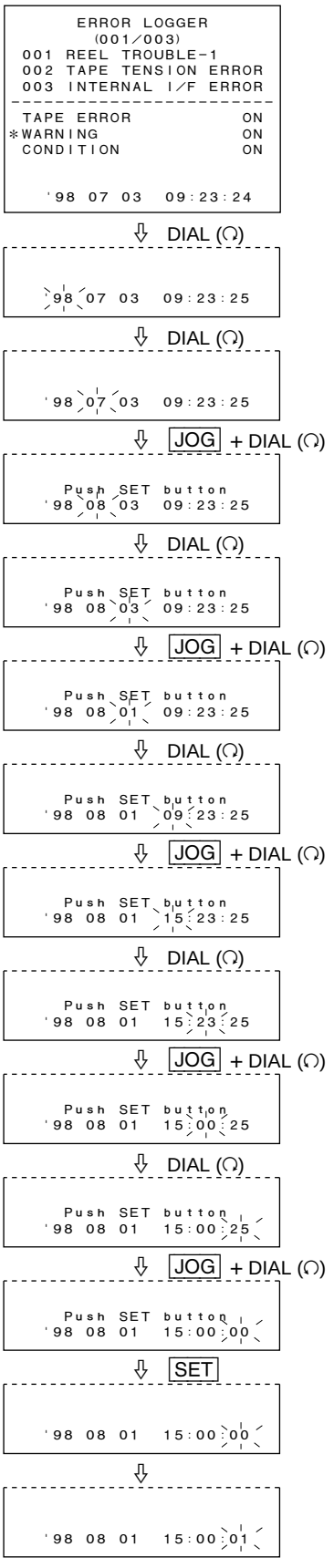
(4) Press the SET button to save the setting values.

Notes

- To change only the date, the time must also be set again.
- To cancel the calendar/clock setting, terminate the setting mode or turn the search dial in REVERSE (↺) direction until the ∗ mark is displayed in the setting menu (the setting menu item is displayed for the time data display area).
- The unit enters the normal operation state when the SET button is pushed with the message "Push SET Button" not displayed on the superimposed display. Press the MENU button to return to the former state.
- To set the time accurately, press the SET button immediately the display and current time coincided.

(5) To exit the setting mode, press the MENU button once.

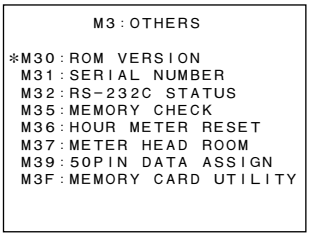
Example of display and operation



4-4. OTHERS CHECK Mode (M3)

4-4-1. Outline

The OTHERS check mode is used for other checks. This unit has the six menus and two submodes (M39 and M3F) below.



OTHERS CHECK mode

Title	Page	Description
M30 : ROM VERSION	4-85	Displays the unit's model name, ROM version, and optionally mounted board.
M31 : SERIAL NUMBER	4-85	Displays and corrects the serial number of this unit.
M32 : RS-232C STATUS	4-86	Displays the interface communication state of an RS-232C connector.
M35 : MEMORY CHECK	4-87	Displays the data in ROM. (Used for check at the factory.)
M36 : HOUR METER RESET	4-87	Displays and resets the resettable hours meter and thread counter.
M37 : METER HEAD ROOM	4-88	Sets the head room of an audio level meter.
M39 : 50PIN DATA ASSIGN	4-88	Sets the 50-pin parallel remote.
M3F : MEMORY CARD UTILITY	—	Uploads and downloads the software using the memory card box.

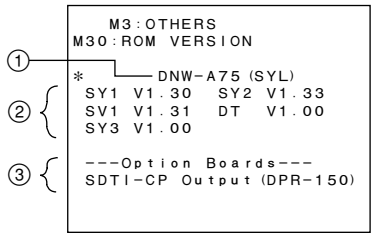
M3F : MEMORY CARD UTILITY

M3F:MEMORY CARD UTILITY is the mode which is required to connect the specified tool; memory card BOX (CDS-20 assembly) when using this mode.
The menu explanation, connection of tool and how to upload/download of software are described in the maintenance manual part 2, volume-1.

http://getMANUAL.com

4-4-2. ROM VERSION Display Menu (M30)

This menu displays the model name of this unit, the destination, the ROM version, and the information of the installed option.



Description of superimposed display

① The model name of this unit and the destination in parentheses are displayed on the superimposed display. The model name and destination are detected from the setting condition of the DIP switch (S1102) on the SS-83 board.

② Each version number of system control ROMs (SY1 and SY2), a servo ROM (SV1), and a DT board control ROM (DT) is displayed on the superimposed display.
When BKNW-124 is used, a version number of BKNW-124 control ROM (SY3) is also displayed.

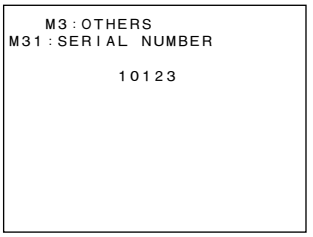
③ The installed option is displayed as described below when the option is installed.
BKNW-118 ⇨ SDTI (SX) Output (DPR-119)
BKNW-124 ⇨ SDTI-CP Output (DPR-150)

Menu operation

Turn the search dial to move the ∗ mark.
The contents of the ∗-marked item on the superimposed display are also displayed in the time data display area.
The installed option is displayed on only the superimposed display.

4-4-3. SERIAL NUMBER Display Menu (M31)

This menu displays the serial number of this unit. When each serial number does not coincide because of repair, it can be set again in this menu.



Notes

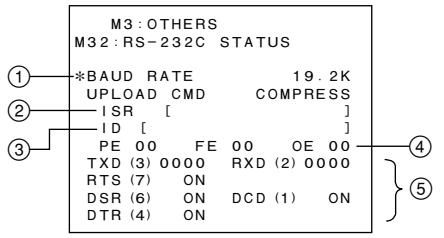
- Set the serial number again after the MS-58 board or the NV-RAM (IC9 on the MS-58 board) is replaced.
- "−−−−−" is displayed in the state where no serial number is set.

Serial number setting

(1) Turn the search dial to turn on and off the digit you wish to set.
(2) Turn the search dial while pressing the JOG button and change the digit number.
  - On changing the serial number, a message "Push SET Button" will be displayed on only the superimposed display.
  - To cancel the setting, press the MENU button to terminate this menu.
(3) Repeat steps (1) and (2) for each digit.
(4) Press the SET button to save the set serial number.
  - On pressing, a message "Saving..." will be displayed on only the superimposed display. If no abnormality is found, the display changes to "Save Complete" after a few seconds.

4-4-4. RS-232C STATUS Display Menu (M32)

This menu displays the communication state of an RS-232C interface. The communication baud rate can also be changed in this menu.



Note

Only the information of the communication baud rate is displayed in the time data display area.

Description of superimposed display

① The communication baud rate is displayed on the superimposed display. The baud rate can be selected from among the followings. (The factory setting is 19.2 K.)
1200, 2400, 4800, 9600, 19.2K (bps)

Note

In a time data display area, 19.2K is displayed as "19 2K".

② The status of an ISR protocol is displayed on the superimposed display.

ISR x [yyyy . . . . . .]
ⓐ ⓑ

ⓐ Displays the protocol status of this unit.
A: ACK send
N: NAK send
T: ATN (OPC or QRESP) send
W: ACK wait
X: XOFF receive, XON wait

ⓑ Displays the last ISR command that was received properly. (The preceding command is displayed until ACK transmission is completed.)

If no object for communication is connected to the RS-232C connector, items ⓐ and ⓑ become blank.

③ The device ID is displayed on the superimpose picture. The device ID is set using the DEVICE command of an ISR protocol. This setting is maintained (even if the power is turned off) until it is changed by the DEVICE command. The device ID becomes blank when it is not set.

④ The number of errors below that occur during reception is displayed on the superimposed display.
PE: Parity error
FE: Framing error
OE: Overrun error
If no object for communication is connected to the RS-232C connector, each error is not displayed as a time count, but as "00".

⑤ The numeral number in parentheses is the pin number of the RS-232C connector.
TXD/RXD displays the number of data (number of bytes) properly sent/received in this unit in four digits (hexadecimal). Others display the connection state of the RS-232C connector in "ON" (+3 V or more) and "OFF" (−3 V or less). When the object for communication is connected to the RS-232C connector, they display as "ON". If no object for communication is connected to the RS-232C connector, the TXD and RXD are displayed as "0000" and the DSR and DCD become undefined state.

Setting of communication baud rate

(1) Turn the search dial while pressing the JOG button and display the desired baud rate.
- On changing the setting, a message "Push SET Button" will be displayed on only the superimposed display.
- To cancel the setting, press the MENU button to terminate this menu.

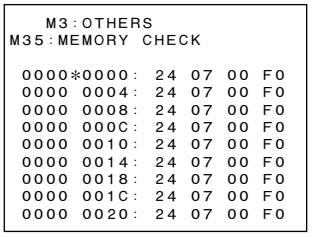
(2) Press the SET button to save the setting.
- On pressing, a message "Saving ..." will be displayed on only the superimposed display. If no abnormality is found, the display changes to "Save Complete" after a few seconds.
To turn off "Save Complete", turn the search dial.

Note

A white square is displayed in the upper-right position of the superimposed display when the SET button is pressed except during communication baud rate setting. This unit then enters the ordinary operation state (in which the ordinary operation of this unit except a menu system can be performed).
However, the character information (time code or operation status) superimposed during ordinary operation is not displayed.
To return to the former state, press the MENU button.

4-4-5. MEMORY CHECK Display Menu (M35)

This menu displays the ROM data installed in this unit in hexadecimal.



Note

This menu is used for inspection at the factory.

Menu operation

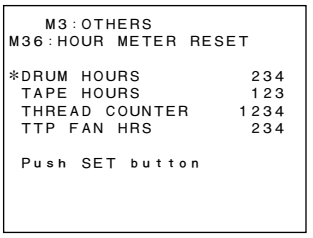
Turn the search dial to move the ∗ mark upward or downward. The address and data display portions are then scrolled.
Turn the search dial while pressing the JOG button: The address then changes 100H at a time.
Turn the search dial while pressing the VAR button: The address then changes 10000H at a time.
Turn the search dial while pressing the JOG and VAR buttons: The address then changes 1000000H at a time.
The contents of the ∗-marked line on the superimposed display are also displayed in the time data display area.

Note

A white square is displayed in the upper-right position of the superimposed display when the SET button is pressed. This unit then enters the ordinary operation state (in which the ordinary operation of this unit except a menu system can be performed).
However, the character information (time code or operation status) superimposed during ordinary operation is not displayed.
To return to the former state, press the MENU button.

4-4-6. HOUR METER RESET Menu (M36)

This menu can display and reset the values of the resettable hours meter and thread counter.



Description of superimposed display

DRUM HOURS: Indicates the total of drum rotation time. Same as in setup menu ITEM-H12.
TAPE HOURS: Indicates the total of tape transport time. Same as in setup menu ITEM-H13.
THREAD COUNTERS: Indicates the total of threading count. Same as in setup menu ITEM-H14.
TTP FAN HRS: Indicates the total of fan (MD) time used. Same as in setup menu ITEM-H15.

Menu operation

Turn the search dial to move the ∗ mark.
The contents of the ∗-marked line on the superimposed display are also displayed in the time data display area.

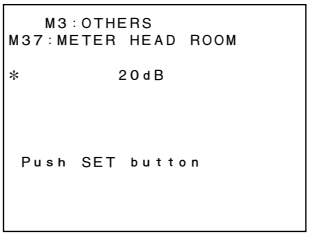
To reset

The former state cannot be returned when the SET button is pressed for reset operation.

(1) Turn the search dial and move the ∗ mark to the item to be reset.
(2) Turn the search dial in REVERSE (↺) direction while pressing the JOG button. = The display value then becomes zero (“0”).
  - On setting the display value to “0”, a message “Push SET Button” will be displayed on only the superimposed display.
  - To return to the former state, turn the search dial in FORWARD (↻) direction.
(3) If there are other items to be reset, repeat steps (1) and (2).
(4) Press the SET button to save the reset data.
  - On pressing, a message “Saving...” will be displayed on only the superimposed display. If no abnormality is found, the display changes to “Save Complete” after a few seconds.
    To turn off “Save Complete”, turn the search dial.

4-4-7. METER HEAD ROOM Setup Menu (M37)

This menu can change the head room setting of an audio level meter.
The head room can be selected from among the followings. (The factory setting is 20 dB.)
20 dB, 18 dB, 16 dB, 15 dB, 14 dB, 12 dB, 9 dB



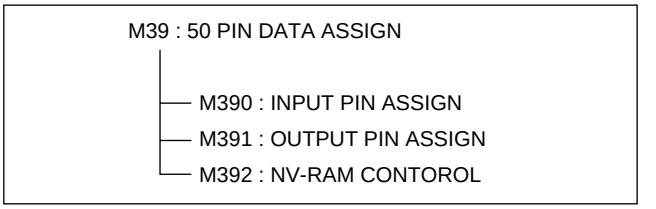
Head room setting

(1) Turn the search dial while pressing the JOG button, and the desired setting is then displayed.
- On changing the setting, a message “Push SET Button” will be displayed on only the superimposed display.
- To cancel the setting, press the MENU button to terminate this menu.

(2) Press the SET button to save the changed setting.
- On pressing, a message “Saving...” will be displayed on only the superimposed display. If no abnormality is found, the display changes to “Save Complete” after a few seconds.
  To turn off “Save Complete”, turn the search dial.

4-4-8. 50PIN DATA ASSIGN Mode (M39)

The M39 : 50PIN DATA ASSIGN changes and resets the pin setup data of 50-pin parallel remote which are settable. Also displays the logic level of the input pin.
Three menus are available.



Menu Tree of 50PIN DATA ASSIGN

CAUTION

Do not change the setting data carelessly. This may cause a trouble. For the actual setting, refer to the optional parallel remote (50-pin) connector interface manual.
If you have changed the setting data carelessly, execute ALL DATA PREVIOUS in M392 : NV-RAM CONTROL menu or turn off the power of this unit without selecting M392 : NV-RAM CONTROL. Never execute SAVE ALL DATA.

M390 : INPUT PIN ASSIGN

This menu changes and resets the input pin setup data. Also displays the logic level of the input pin.

Description of display

The pin numbers are displayed at the line of “No.”. Also the right at the pin number is displayed the logic level state (H;high, L;low).

To change the setup data

(1) Turn the search dial (JOG mode) to set the ∗ mark to the left side of the data to be changed.
(2) Turn the search dial while pressing the JOG button to change the data.
FORWARD direction (↻): Data value increase
REVERSE direction (↺): Data value decrease

Note

At the first bite, the data change only area of which from 00 to 73. If it is required to extend the area of which from 00 to FF, turn the search dial while pressing the EJECT and PLAY buttons simultaneously.

(3) Repeat steps (1) and (2) for any other data.
(4) To finish the menu, press the MENU button once.
(5) To save the setup data into the NV-RAM, execute the SAVE ALL DATA in M392 : NV-RAM CONTROL menu.

Example of display and operation

```
   50PIN DATA ASSIGN
M390:INPUT PIN ASSIGN

 No.       Command
---+--------------------
 01:H∗20 10 00 00 00 00
 18:H 20 30 00 00 00 00
 19:H 20 05 00 00 00 00
 20:H 20 20 00 00 00 00
 21:H 40 10 00 00 00 00
 22:H 20 04 00 00 00 00
 23:H 20 0F 00 00 00 00
```

(1) ⇩ DIAL

```
   50PIN DATA ASSIGN
M390:INPUT PIN ASSIGN

 No.       Command
---+--------------------
 01:H 20 10 00 00 00 00
 18:H 20∗30 00 00 00 00
 19:H 20 05 00 00 00 00
 20:H 20 20 00 00 00 00
 21:H 40 10 00 00 00 00
 22:H 20 04 00 00 00 00
 23:H 20 0F 00 00 00 00
```

(2) ⇩ [JOG]+DIAL

```
   50PIN DATA ASSIGN
M390:INPUT PIN ASSIGN

 No.       Command
---+--------------------
 01:H 20 10 00 00 00 00
 18:H 20∗50 00 00 00 00
 19:H 20 05 00 00 00 00
 20:H 20 20 00 00 00 00
 21:H 40 10 00 00 00 00
 22:H 20 04 00 00 00 00
 23:H 20 0F 00 00 00 00
```

(4) ⇩ [MENU]
(5) ⇩ Data save

```
∗M392:NV-RAM CONTROL
```

M391 : OUTPUT PIN ASSIGN

This menu changes and resets the output pin setup data. Also displays the logic level of the input pin.

Description of display

The pin numbers are displayed at the line of “No.”. Also the right at the pin number is displayed the logic level state (H;high, L;low).

To change the setup data

(1) Turn the search dial (JOG mode) to set the ∗ mark to the left side of the data to be changed.
(2) Turn the search dial while pressing the JOG button to change the data.
FORWARD direction (↻): Data value increase
REVERSE direction (↻): Data value decrease

Note

At the first bite, the data change only area of which from 00 to 73. If it is required to extend the area of which from 00 to 0D, turn the search dial while pressing the EJECT and PLAY buttons simultaneously.

(3) Repeat steps (1) and (2) for any other data.
(4) To finish the menu, press the MENU button once.
(5) To save the setup data in the NV-RAM, execute the SAVE ALL DATA in M392 : NV-RAM CONTROL menu.

Example of display and operation

```
   50PIN DATA ASSIGN
M391:OUTPUT PIN ASSIGN

 No.       Command
---+--------------------
 10:H*02 02 72 20 00 00
 11:H 02 02 72 10 00 00
 12:H 01 02 00 20 00 00
 13:H 02 02 2B 08 00 00
 26:H 02 02 72 08 00 00
 27:H 02 02 04 10 00 00
 28:H 02 02 01 10 00 00
```

(1) ⇩ DIAL

```
   50PIN DATA ASSIGN
M391:OUTPUT PIN ASSIGN

 No.       Command
---+--------------------
 10:H 02 02 72 20 00 00
 11:H 02*02 72 10 00 00
 12:H 01 02 00 20 00 00
 13:H 02 02 2B 08 00 00
 26:H 02 02 72 08 00 00
 27:H 02 02 04 10 00 00
 28:H 02 02 01 10 00 00
```

(2) ⇩ JOG +DIAL (↻)

```
   50PIN DATA ASSIGN
M391:OUTPUT PIN ASSIGN

 No.       Command
---+--------------------
 10:H 02 02 72 20 00 00
 11:H 02*01 72 10 00 00
 12:H 01 02 00 20 00 00
 13:H 02 02 2B 08 00 00
 26:H 02 02 72 08 00 00
 27:H 02 02 04 10 00 00
 28:H 02 02 01 10 00 00
```

(4) ⇩ MENU
(5) ⇩ Data save

```
*M392:NV-RAM CONTROL
```

M392 : NV-RAM CONTROL

This menu is used to save the input/output data set in the 50 PIN DATA ASSIGN mode into the NV-RAM.
The current setup data can return to the former saved data before the change when executing ALL DATA PREVIOUS without saving the setup data into the NV-RAM.

Note

When the power is turned off without saving the changed data, the setup data returns to the former saved data.

To execute the menu

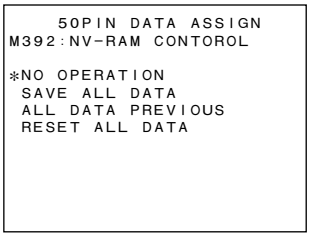
(1) Turn the search dial to set the ∗ mark on the superimposed display as described below.
To save the setup data after changing:
⇨ "SAVE ALL DATA"
To return the setup data before changing:
⇨ "ALL DATA PREVIOUS"
To return the setup data to factory setting, and save that data:
⇨ "RESET ALL DATA"

(2) Press the SET button.
- On pressing it, the data transmission is initiated.
- On the superimposed display, a message "Saving ..." or "Loading ..." will be displayed.
In the time data display area, a message "SAVING" or "LOADING" will be displayed.

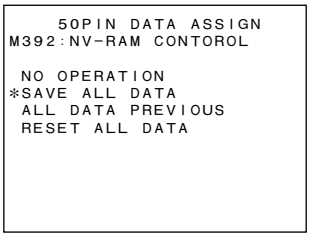
(3) Check to see that the data transmission is completed.
- On completing the data transmission:
On the superimposed display, a message "Save Complete." or "Load Complete" will be displayed.
In the time data display area, a message "SAVING" or "LOADING" will be displayed.

(4) To exit the menu, press the MENU button once.

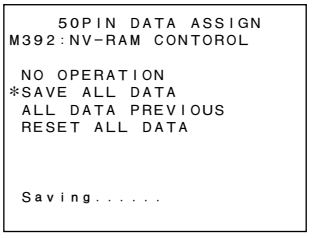
Example of display and operation



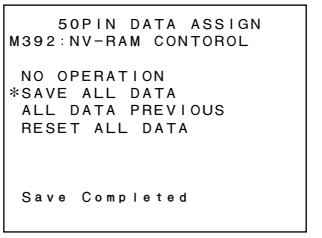
(1) ⇩ DIAL (∩)



(2) ⇩ SET



⇩



(3) ⇩ Check
(4) ⇩ MENU

Section 5
Periodic Maintenance and Inspection

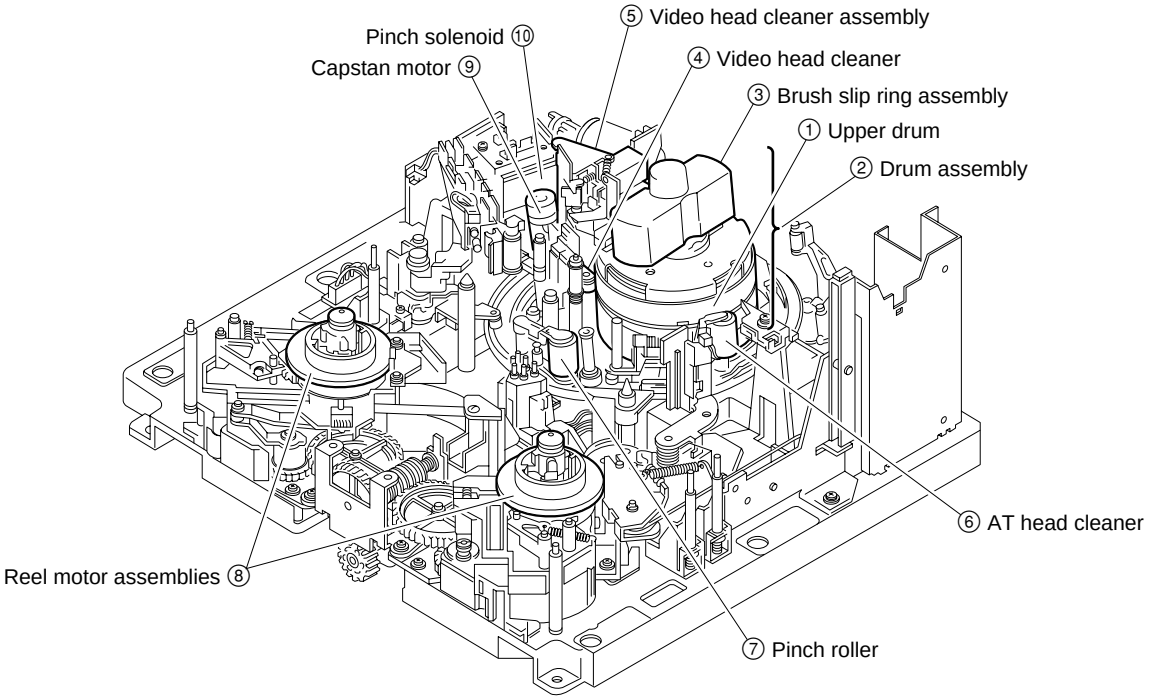
This section explains about periodic maintenance and how to clean.

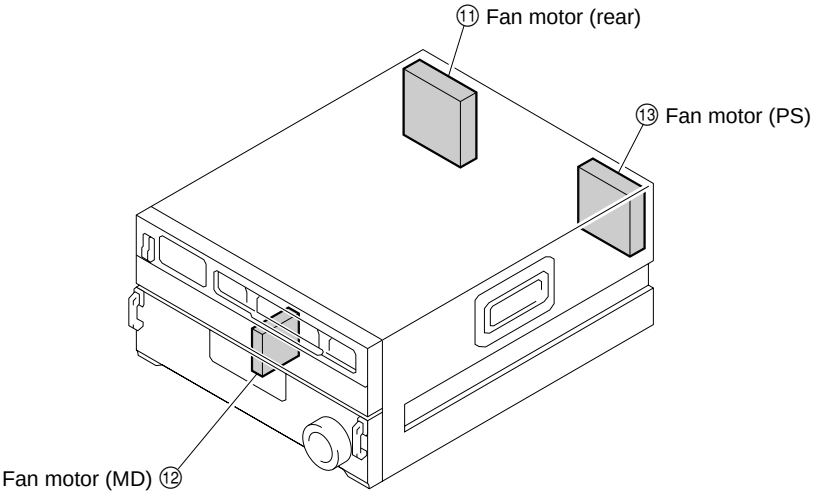
5-1. Periodic Maintenance

To make the most of the functions, fully realize the performances of this unit and to lengthen the life of the unit, periodic check and parts replacement are recommended.

5-1-1. Index

It is necessary to check and replace periodically to the following parts.
The numbers in the illustration correspond to the table in the next page.





5-1-2. Periodic Replacement and Check Item Table

The replacement time shown in the following table is not the guarantee term of parts. The replacement time of parts varies depending on the operating environment and conditions of the unit.
Especially the pinch roller and cleaners, may be required replacing earlier than replacement period shown in the table depending on the degree of their dirt or abrasion.
The arrows "↓" and "↑" in the table indicate that the part is included in the assembly described on the lower/upper line. If the assembly on the pointed line is replaced, the part is also replaced as a component of the assembly together.
As for the hours meter, refer to Section 5-1-3.
As for replacing each part, refer to the maintenance manual Part 2, Volume-1.

R : Replace the part. C : Perform check (adjustment).
Replace it depending on its condition.

No.	Replacement parts	Hours meter (Menu No.)	Inspection hours (h) 1000	2000	3000	4000	5000	6000
①	Upper drum	Drum rotating time (H02)		C *1	C *1	C *1	C *1	C *1 (↓)
②	Drum assembly *2	Drum rotating time (H02)						C *3
③	Brush slip ring assembly	Drum rotating time (H02)						R (↑)
④	Video head cleaner	Drum rotating time (H02)	C *4	C *4	C *4	C *4	C *4	↓
⑤	Video head cleaner assembly *5 *6	Drum rotating time (H02)						R
		Threading times (H04)	Replace when used 200,000 times					
⑥	AT head cleaner	Drum rotating time (H02)	C *4	R	C *4	R	C *4	R
⑦	Pinch roller	Tape running time (H03)	C *4	R	C *4	R	C *4	R
⑧	Reel motor	Tape running time (H03)				R		
⑨	Capstan motor	Tape running time (H03)						R
⑩	Pinch solenoid *6	Tape running time (H03)						R
		Threading times (H04)	Replace when used 200,000 times					
⑪	Fan motor (rear)	Energized time (H01)	Replace when used 40,000 hours					
⑫	Fan motor (MD)	Energized time (H15)	Replace when used 40,000 hours					
⑬	Fan motor (PS)	Energized time (H01)	Replace when used 40,000 hours					

∗1: Refer to Section 5-3 to measure and check the video head tip protrusion.
∗2: Drum assembly includes an upper drum and a brush slip ring assembly.
∗3: Check (adjust) the video tracking referring to Section 4-1-3 of the maintenance manual part2, volume-1.
∗4: Check that the shape is not deformed and that is not dirty by visual.
∗5: Video head cleaner assembly includes a video head cleaer.
∗6: Replace these parts when the replacement period or count is reached whichever is earlier.

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Part No.	Name	Q'ty	Note
A-8320-031-A	Upper drum DJR-22A-R	1	
A-8320-030-A	Drum DJH-22A-R	1	
A-8320-032-A	Ring (9) assembly (RP), brush slip	1	
A-8320-546-A	Roller (B) assembly (RP), V cleaning	1	
3-182-765-02	Spacer, CR	1	
A-8320-545-A	Video head cleaner (B) assembly (RP)	1	
X-3167-053-2	Arm assembly, CL	1	
X-3167-054-4	Arm assembly, pinch	1	
A-8267-774-E	RM assembly	2	
1-698-179-12	Motor, DC (capstan)	1	
1-454-338-00	Solenoid, plunger	1	
1-763-170-11	Fan, DC (92 square)	1	
1-698-786-11	Fan, DC (60 square)	1	
1-698-785-41	Fan, DC (80 square)	1	

Replace the parts shown in the table below periodically when the threading/un-threading operation is repeated frequently.

Replacement parts	Replacement period	Part No.	Name	Q'ty
Brake solenoid	Every 200,000 times of threading	1-454-417-31	Solenoid, Plunger	1
S tension regulator	Every 200,000 times of threading	A-8267-795-E	Tension regulator assembly (RP)	1
T tension regulator	Every 200,000 times of threading	A-8267-423-B	T-tension regulator assembly	1
T drawing arm assembly	Every 200,000 times of threading	A-8274-876-D	Drawer assembly (T)	1
Gear box assembly	Every 200,000 times of threading	A-8267-424-A	Box assembly, Gear	1
Threading ring assembly	Every 200,000 times of threading	A-8267-395-F	Ring assembly, Threading	1
Ring roller	Every 200,000 times of threading	3-180-677-01	Roller, Ring	2
		3-180-679-01	Roller (B), Ring	1
Pinch arm guard	Every 200,000 times of threading	3-180-853-01	Guard, Pinch arm	1
CL guide rail	Every 200,000 times of threading	3-180-874-02	Rail, CL guide	1
Cassette compartment assembly	Every 200,000 times of threading	A-8267-589-F	Cassette compartment (RP)	1
Video head cleaner	Every 1,000 hours of drum rotating	A-8320-546-A	Roller (B) assembly (RP), V cleaning	1
		3-182-765-02	Spacer, CR	1
AT head cleaner	Every 1,000 hours of drum rotating	X-3167-053-2	Arm assembly, CL	1
Pinch roller	Every 1,000 hours of drum rotating	X-3167-054-4	Arm assembly, Pinch	1

5-1-3. Hours Meter

This unit can display an hours meter on the time data display area of the lower control panel. Perform a periodic check with this hours meter as a reference.

1. Contents of display

Menu No.	Display	Contents
H01	OPERATION HOURS	Sum of energized time
H02	DRUM RUNNING HOURS	Sum of drum rotating time
H03	TAPE RUNNING HOURS	Sum of tape running time
H04	THREADING COUNTER	Sum of threading
H12	DRUM RUNNING HOURS	Sum of drum rotating time (Resettable)
H13	TAPE RUNNING HOURS	Sum of tape running time (Resettable)
H14	THREADING COUNTER	Sum of threading (Resettable)
H15	TTP FAN OPERATION HOURS	Sum of TTP fan operating time (Resettable)

2. Display procedure

1. Press the MENU button on the lower control panel.
2. Put the "∗" to the desired ITEM by turning the search dial.
3. Press the SET button on the lower control panel to display the hours meter.
4. Press the MENU button once and repeat from step 2 to display other ITEM.
   Press the MENU button twice to exit the MENU.

5-2. Cleaning

To make the most of the functions, fully realize the performance of this unit, and to lengthen the life of the unit and tape, clean the components often.

5-2-1. Cleaning using Cleaning Tape

If the video heads are clogged, clean the video head as the following procedure. Make sure to use the specified cleaning tape. If other tape is used, unusual abrasion or damage of the video heads may occur.

Specified cleaning tape: BCT-5CLN

Procedure

1. Insert the cleaning tape BCT-5CLN into the unit.
2. Press the EJECT and PLAY buttons simultaneously.
   The cleaning tape is played back for approx. 5 seconds. After that, the cleaning tape will be ejected automatically.
   Notes
   - If the cleaning tape is not ejected after playing back more than 5 seconds, press the EJECT button immediately to eject the cleaning tape.
   - Do not fast-forward or rewind the cleaning tape and leave it into the unit in the STOP mode to avoid damage to the video head.
3. Check to see that the head clogging is clear.

If the video heads are still clogged after cleaning using a cleaning tape, clean them using a cleaning cloth. (Refer to Section 5-2-3.)

5-2-2. General Information for Cleaning using Cleaning Cloth

1. Cautions

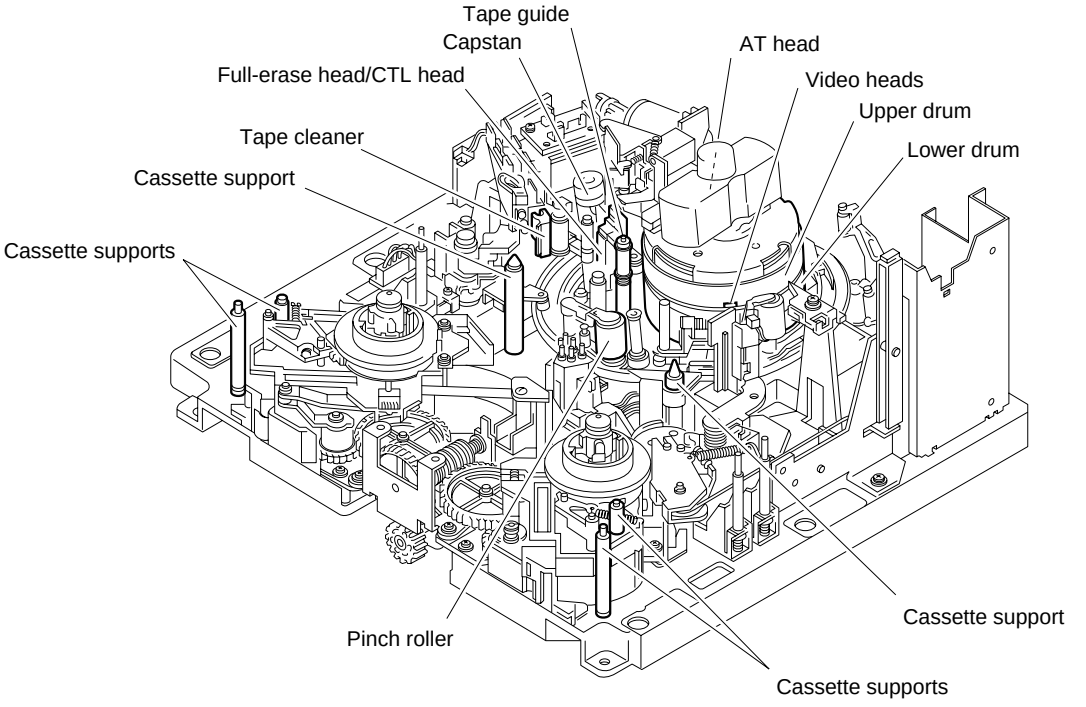
- Be sure to turn the power off before cleaning.
- Each block in the mechanical deck consists of a precision part and is adjusted precisely. Be careful not to damage each part and to apply an excessive force during cleaning.
- Do not contact the greased portions during cleaning. If the grease smears to a cleaning cloth, use a new cloth to avoid allow the grease to contact places where it should not.
- Do not insert a cassette tape before a cleaning fluid completely evaporates after cleaning.

2. Preparation

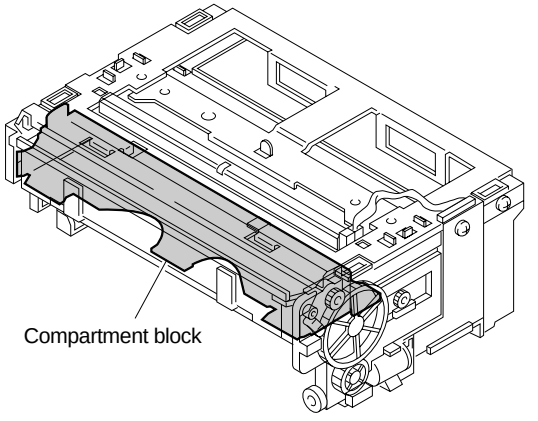
1. Turn off the power.
2. Remove the upper lid. (Refer to Section 2-3-1.)
3. Remove the plate MD assembly. (Refer to Section 2-4.)
4. Remove the cassette compartment. (Refer to Section 2-5.)

3. Cleaning Parts

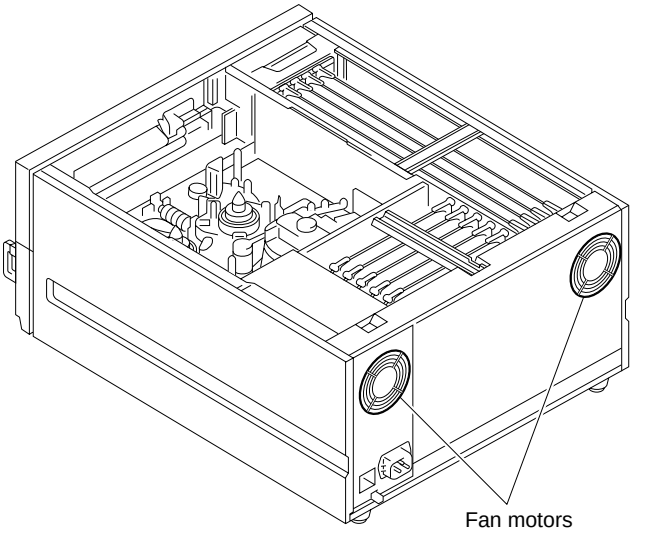
< Mechanical Deck Block >



< Cassette Compartment >



< Chassis >



5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning

WARNING

Never contact the rotating drum.
Be sure to turn off the power and wait until the drum comes to a complete stop before cleaning.

Caution

The video heads are the part that can be damaged easily. Be careful not to damage the video heads during cleaning.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Note

Never use a cotton swab to clean the video heads.

Procedure

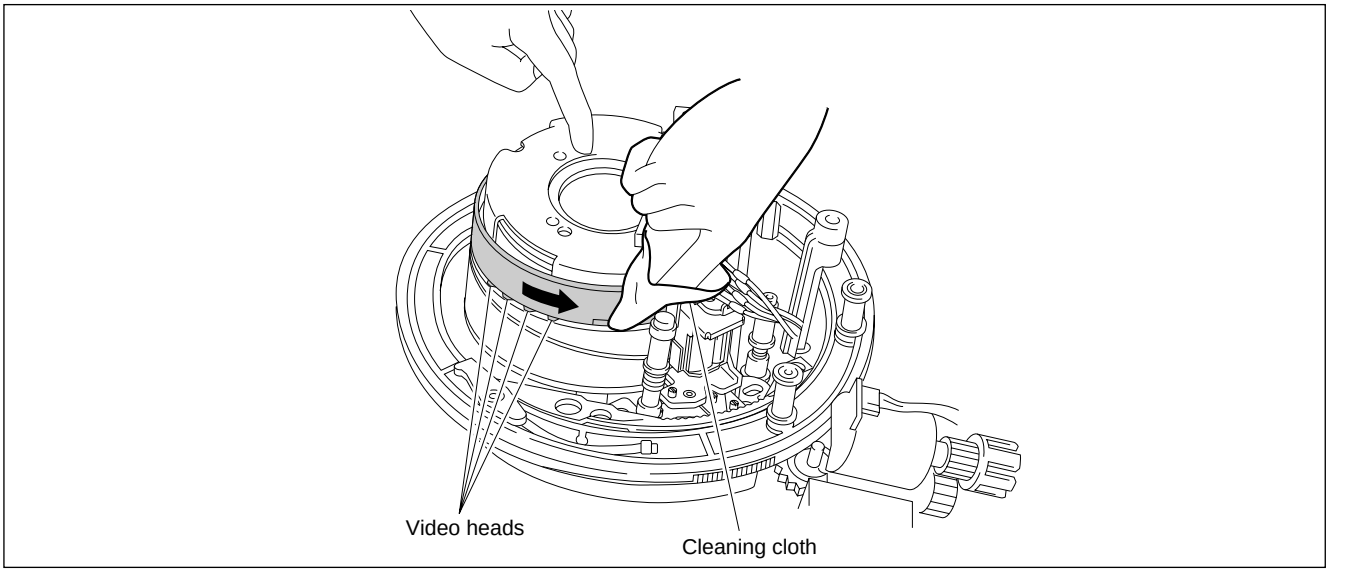
1. Hold the cleaning cloth moistened with a cleaning fluid keeping it without becoming wrinkled. And then slightly press the cleaning cloth against the video heads.

2. Slowly rotate the upper drum counterclockwise two or three turns and clean the tape-running surface and video heads without moving the cleaning cloth.

   Note

   Be sure to rotate the upper drum counterclockwise and clean the video heads along the circumference. Do not rotate it in the opposite direction (clockwise) or clean the video heads in the vertical direction to avoid damaging the video heads and brush slip ring assembly.

3. After cleaning, wipe them using a dry cleaning cloth two or three times.



Video Heads Cleaning

5-2-4. Tape Running Surface of Lower Drum and Lead Surface Cleaning

Caution

Be careful not to damage the lower drum (especially lead surface) during cleaning. Pay careful attention when cleaning the edge portion above the lower drum because it is located near the video heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Skewer or an equivalent (Not metallic.)

Procedure

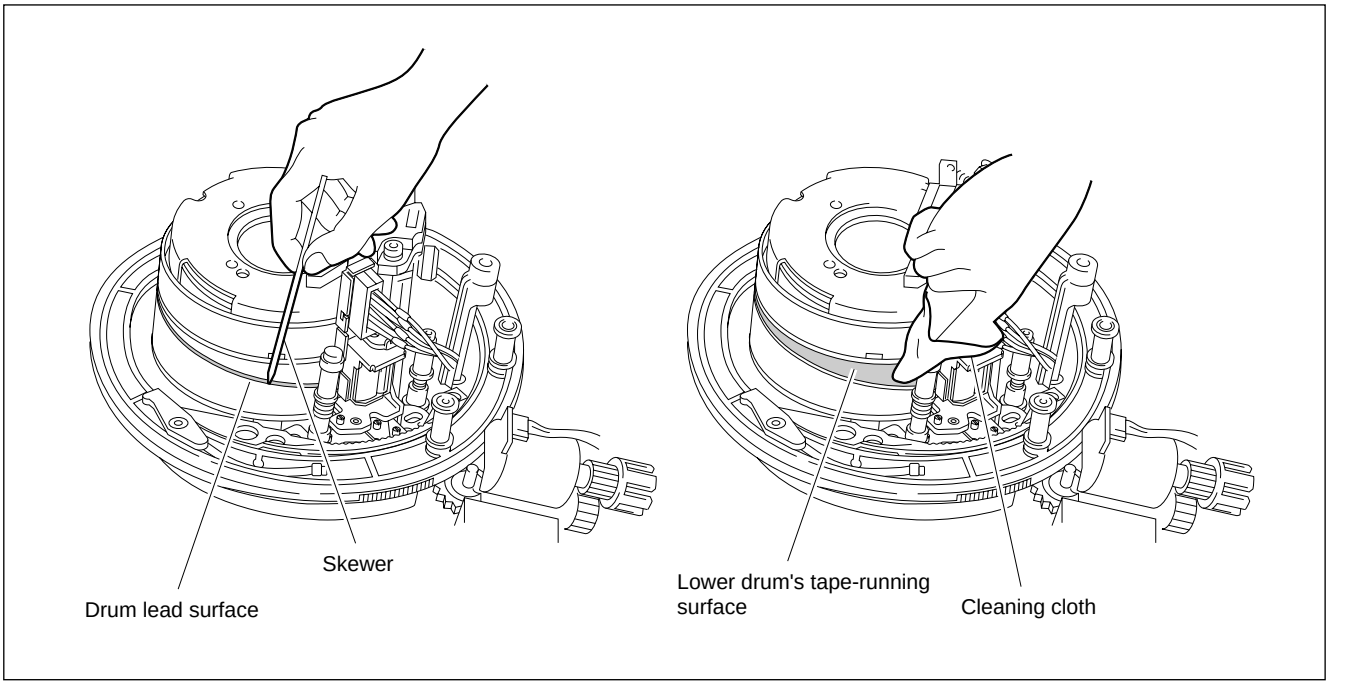
1. As shown in the figure, remove the magnetic powder using a skewer, running the skewer on the drum lead surface.

   Notes

   - Never use a metallic skewer to avoid damaging the tape-running surface.
   - Be sure to remove the magnetic powder completely. Tracking may be badly influenced if magnetic powder attaches to the drum lead surface.

2. Clean the drum lead surface and lower drum's tape-running surface (shaded portion in the figure) using a cleaning cloth moistened with a cleaning fluid.

3. After cleaning, wipe them using a dry cleaning cloth two or three times.



Tape-running Surface of Lower Drum and Lead Surface Cleaning

5-2-5. Stationary Heads Cleaning

Caution

- Be careful not to damage the head surface when cleaning the stationary heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

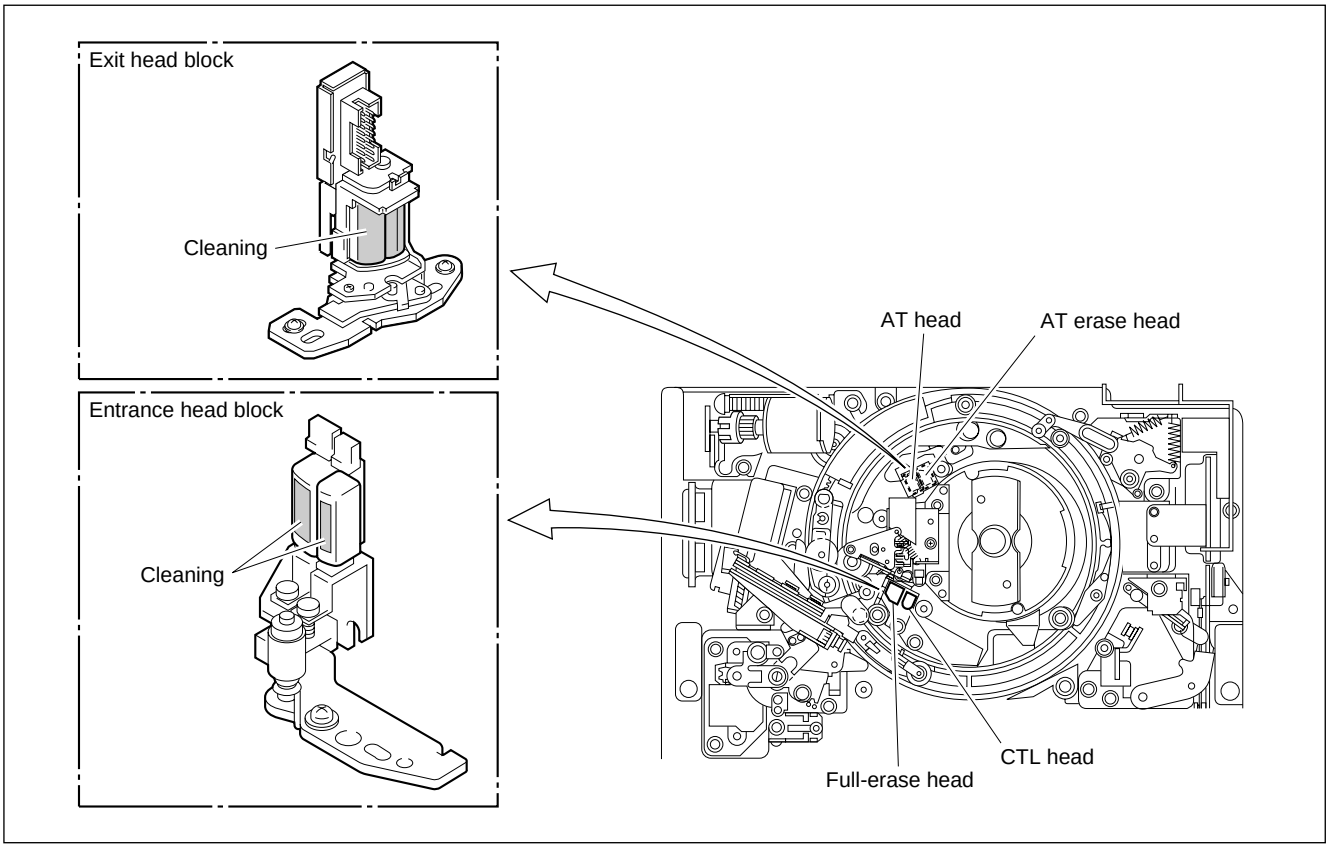
Procedure

1. Clean the tape-running surfaces of the AT, AT erase, CTL, and full erase heads in the vertical direction using a cleaning cloth moistened with a cleaning fluid.

   Note

   Be sure to remove the magnetic powder completely.
   An error may occur in the recording or playback if magnetic powder attaches to the head gap portion of the AT, AT erase, CTL, and full-erase heads.

2. After cleaning, wipe them using a dry cleaning cloth two or three times.



Stationary Heads Cleaning

5-2-6. Tape Running System and Tape Cleaner Cleaning

WARNING

Keep bare hands away from the sharp edge of the tape cleaner to avoid cuts and injuries.
Pay careful attention when cleaning the tape cleaner.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Procedure

1. Wipe off the surfaces of the tape cleaner using a paper (such as a sheet of paper of this manual) to remove the magnetic powder adhered on the tape cleaner.

   WARNING

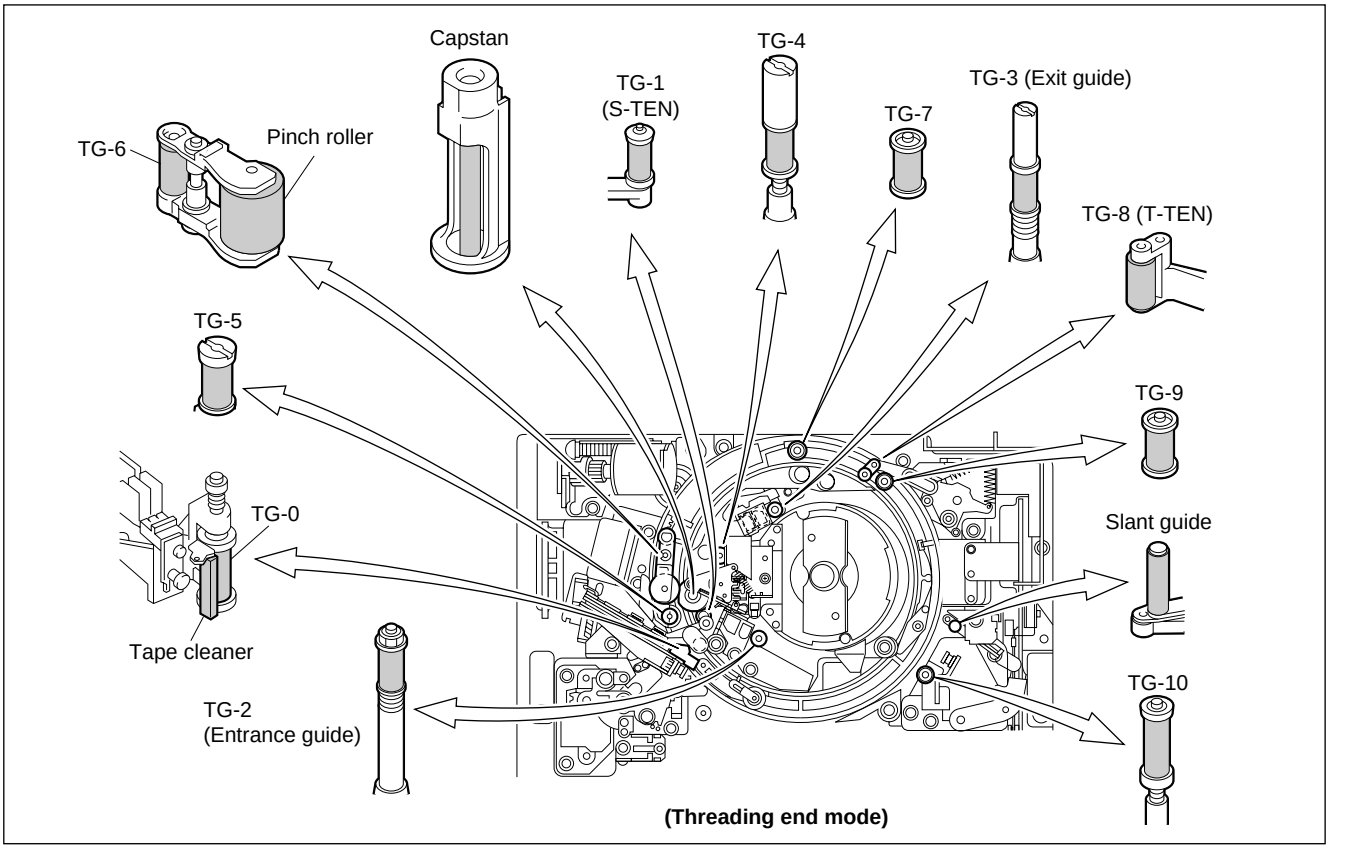
   Do not contact the edge portion of the tape cleaner with bare hands.

   Note

   Do not apply an excessive force to the tape cleaner to avoid damaging it.

2. Clean the tape-running surfaces (shaded portions in the figure) of each guide and the tape cleaner using cleaning cloth moistened with a cleaning fluid.

3. After cleaning, clean them using a dry cleaning cloth two or three times.



Tape-running System and Tape Cleaner Cleaning

5-2-7. Fan Motors Cleaning

Notice

Clean the fan motor on the rear panel often because it accumulates dust easily.
The dusty fan motors disturb the air flow through the unit, and a rise in the inside temperature of the unit may badly influence the performance and life of the unit.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Vacuum cleaner

Procedure

1. Remove the power panel. (Refer to Section 2-3-4.)
   Disconnection of harnesses is not required.

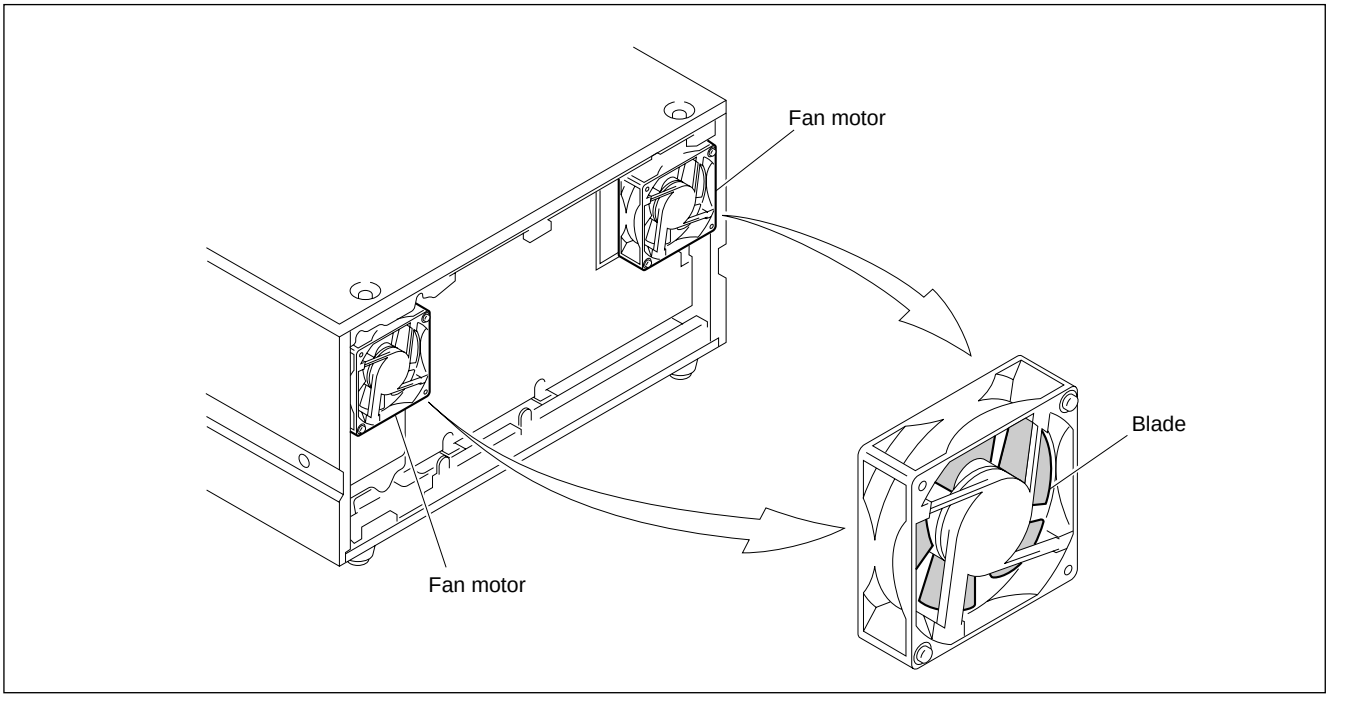
2. Remove the connector panel. (Refer to Section 2-3-3.)
   Disconnection of harnesses is not required.

3. Remove the dust on the fan motors using a vacuum cleaner.

4. Clean the blades of the fan motors (shaded portion in the figure) using cleaning cloth moistened with a cleaning fluid.

5. Reattach the connector panel. (Refer to Section 2-3-3.)

6. Reattach the power panel. (Refer to Section 2-3-4.)



Fan Motors Cleaning

5-2-8. Cassette Compartment and Cassette Supports Cleaning

Notes

- Being careful not to apply an excessive force to the compartment block or mirror, clean the cassette compartment.
- Do not use an alcoholic chemical in cleaning of the door and mirror to avoid cracking them.

Tools

- Cloth (or Gauze)
- Vacuum cleaner

Procedure

1. Remove the cassette compartment from the unit. (Refer to Section 2-5.)

2. Remove the dust on the cassette compartment from the cassette insertion inlet using a vacuum cleaner.

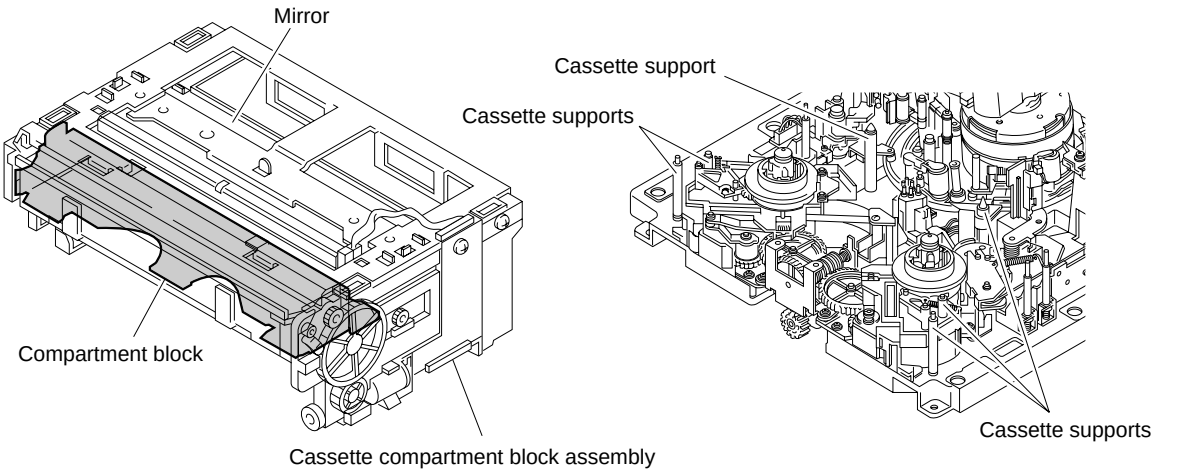
3. Clean the compartment (shaded portion in the figure) using a dry cloth (or gauze).

   Note

   Do not apply an excessive force to the compartment block.

4. Clean the cassette supports on the mechanical deck using a dry cloth (or gauze).

5. Reattach the cassette compartment. (Refer to Section 2-5.)



Cassette Compartment Cleaning

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5-3. Video Head Tip Protrusion Check

When performing the periodic maintenance or inspection, measure the tip protrusion of the video heads using a head tip protrusion measurement gauge to check them for the upper drum assembly replacement.

If the tip protrusion of all heads are satisfying the following specification and more, it enables to recording and playing back on the tape.

Head	Specification
PB heads for Betacam/Betacam SP format	20 µm
PB heads for Betacam SX format	22 µm
REC heads for Betacam SX format	24 µm

If the tip protrusion of any one head is under the specification, it is recommended that the upper drum assembly should be replaced early before occurring the trouble at the recording or playing back.
For the upper drum replacement, refer to Section 3-2 in the maintenance manual part 2, volume-1.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-537-01
- Head tip protrusion measurement gauge: J-6530-650-A
- Torque screwdriver (6 kg•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l = 75 mm): J-6323-420-A

5-3-1. Head Tip Protrusion Measurement

Preparations for VTR

1. Remove the top plate. (Refer to Section 2-3-1.)
2. Remove the plate MD assembly. (Refer to Section 2-4.)
3. Remove the cassette compartment. (Refer to Section 2-5.)
4. Remove the brush slip ring assembly. (Refer to Section 5-3-2.)
5. Clean the outer circumference and video heads of the upper drum (shaded portions in Figure 1). (Refer to Section 5-2-3 for the cleaning method.)

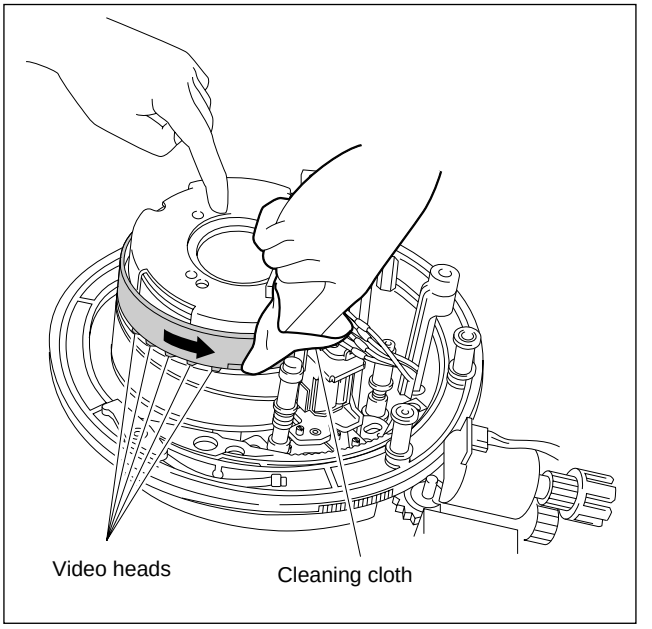


Figure 1. Cleaning of Drum

Preparations for Head Tip Protrusion Measurement Gauge

This gauge is the precision equipment. Handle with care.

1. Loosen the adjustment screw fully (by turning it counterclockwise).
2. Clean the probe, positioning flange, and portion touching the drum of two legs. (Refer to Figure 3.)

Note

Do not apply excessive force to the probe during cleaning. If a deposit of µm order exists, measurement cannot be performed accurately.

Setting of Head Tip Protrusion Measurement Gauge

Note

Being careful not to damage the tape-running surface and video heads of the drum, set the gauge.

1. Turn the upper drum manually counterclockwise (↺) to align the screw hole (⇨ mark on the board cover) to the rib of the threading ring as shown in Figure 2.
   Note
   The upper drum position is determined as described above to put the probe of the head tip protrusion measurement gauge on the absence of a head. The video head that first measures the protrusion value is the CNF A head.
2. Check the value that the dial gauge pointer reads.
3. Position a probe between the C-B head and CNF A head. (Refer to Figure 2.)
4. Press the tip of two legs against the outer circumference of the drum's upper surface while keeping the base plate of the measurement gauge in parallel with the upper surface of the drum. Be sure to keep the probe of the measurement gauge sufficiently away from the drum.
5. Lower the measurement gauge slowly until the ridges of the two legs and positioning flange touch the upper drum while pushing two legs against the outer circumference of the drum's upper surface (applying force slightly to the measurement gauge in the direction indicated by the arrow). (Refer to Figure 3.)
   Notes
   - Before placing a measurement gauge on the drum, ensure that the adjustment screw has been loosened fully.
   - Perform carefully and slowly so that the probe of a measurement gauge does not touch the outer circumference or video head on the drum. (Lower so that the probe is slightly higher than the two legs.)
   - After placing the measurement gauge on the drum, be sure to support it with hand at all time.
     If it is loose carelessly, the drum and measurement gauge will turn and damage the peripheral parts.
6. Check to see the followings:
   - The probe is in the middle of the adjacent heads.
   - The positioning flange adheres closely to the outer circumference of the drum's upper surface.
   - The legs adhere closely to the outer circumference of the drum's upper surface.
   - The value that the dial gauge pointer reads is the same as before setting (in step 2).
7. Turn the adjustment screw clockwise until the dial gauge pointer rotates approximately a half turn.
8. Turn the outer frame of the dial gauge to align zero (0) to the pointer.

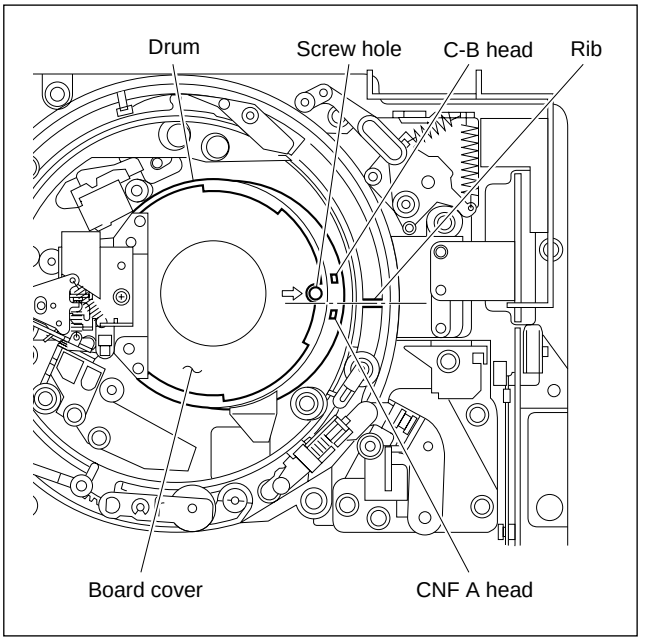


Figure 2. Setting of Drum Position

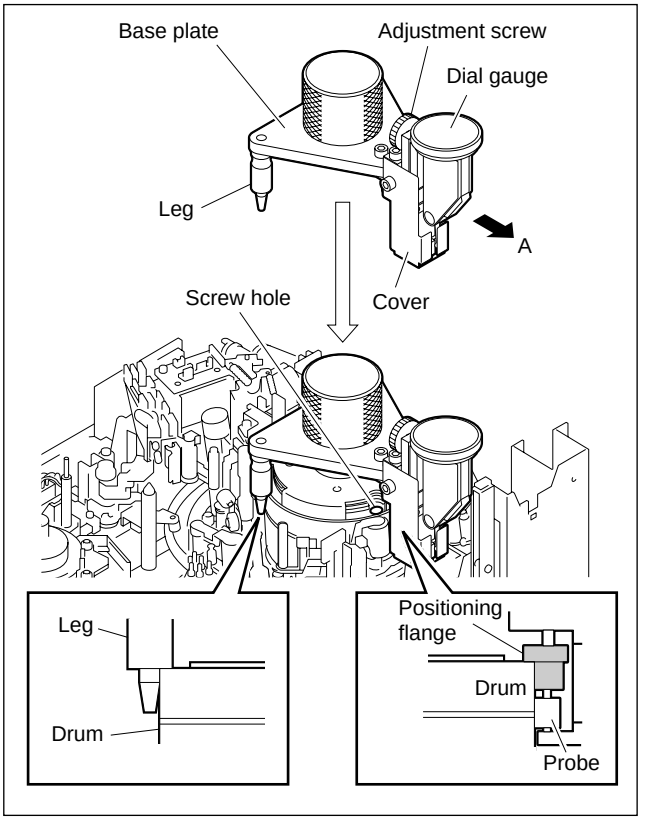


Figure 3. Setting of Head Tip Protrusion Measurement Gauge

Measurement of Head Tip Protrusion

Note

When turning the upper drum manually, hold the cover of the measurement gauge by your hand to not come to turn the gauge with the drum rotation.

1. Turn the upper drum manually counterclockwise (↺) very slowly to approach a video head aside of the probe. (Refer to <A> in Figure 4.)
2. Read the dial gauge pointer. (= Ha)

   Note

   The scale of the dial gauge is 2 µm (0.002 mm) pitch. Clockwise: +. Counterclockwise: −.
3. Turn the upper drum manually counterclockwise (↺) very slowly to center the video head in the probe. (Refer to <B> in Figure 4.)
4. Read the dial gauge pointer. (= Hb)
5. Calculate the real head tip protrusion Hr with the Ha and Hb.
   Hr = Hb − Ha
6. Calculate the head tip protrusion Hr for all heads with steps 1 through 5 performing .
7. Measure and calculate the real head tip protrusion Hr for all heads again.

   Note

   Do it two times for fear of measuring error.

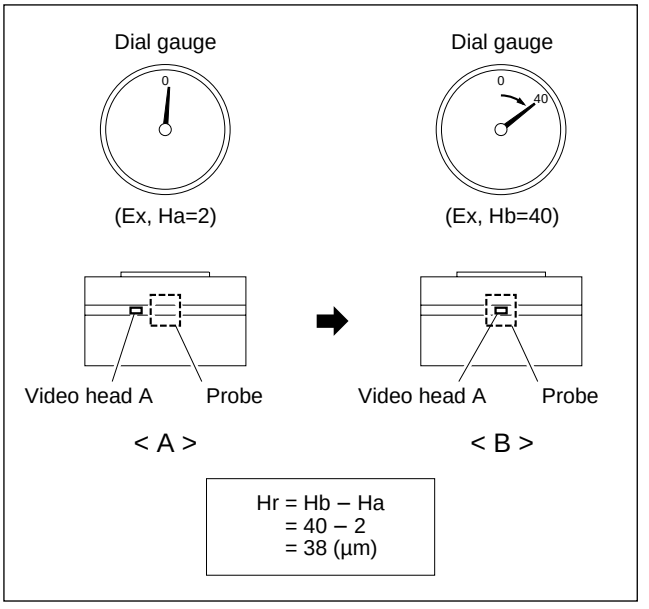


Figure 4. Example of Head Tip Protrusion Measurement

This table is in measure order of the heads.

Head name	Spec. (µm)	Head tip protrusion (Hr = Hb − Ha) First time	Second time
CNF A	22	= − |	= −
CNF B	22	= − |	= −
Dummy	−	(No need for measurement)	
ADV A5	22	= − |	= −
ADV B5	22	= − |	= −
ADV A6	22	= − |	= −
ADV B6	22	= − |	= −
Y-A	20	= − |	= −
C-A	20	= − |	= −
Erase	−	(No need for measurement)	
REC A	24	= − |	= −
REC B	24	= − |	= −
Dummy	−	(No need for measurement)	
ADV A1	22	= − |	= −
ADV B1	22	= − |	= −
ADV A2	22	= − |	= −
ADV B2	22	= − |	= −
Y-B	20	= − |	= −
C-B	20	= − |	= −

Removal of Head Tip Protrusion Measurement Gauge

1. Turn the upper drum manually counterclockwise (↺) very slowly to move a video head aside from the probe.
2. Loosen the adjustment screw fully (by turning it counterclockwise).
3. Lift up the positioning flange from the outer circumference of the drum's upper surface to a few millimeters, and then lift the measurement gauge slowly and remove it while pushing two legs against the outer circumference of the drum's upper surface (applying force slightly to the measurement gauge in the direction indicated by arrow A). (Refer to Figure 3.)

   Note

   Perform carefully and slowly so that the probe of a measurement gauge does not touch the outer circumference or video head on the drum.

5-3-2. Brush Slip Ring Assembly Removal/Reinstallation

Preparing tools

- Torque screwdriver (6 kg•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l = 75 mm): J-6323-420-A

Note

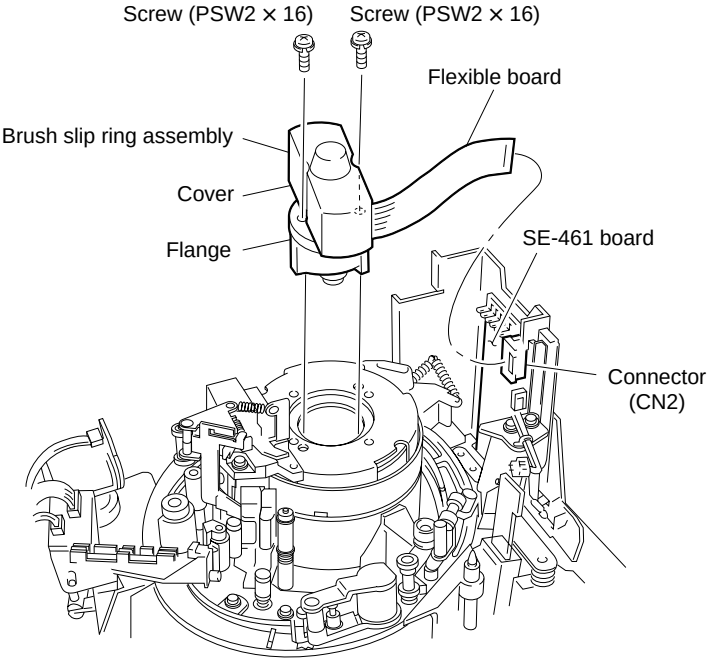
If replacing the brush slip ring assembly, refer to Section 3 in the maintenance manual part 2, volume-1.

Removal

1. Unlock the connector CN2, then disconnect the flexible board from the connector CN2 on the SE-461 board.
   Note
   To unlock the connector CN2, pull the slider (white) of the connector.
2. Unscrew the two screws to remove the brush slip ring assembly.
   Note
   Do not apply any force forcibly to the brush slip ring assembly.
3. To take out the screws, turn the brush slip ring assembly upside down.
   Note
   Be careful not to drop these screws in the cover.

Reinstallation

4. Insert the two screws removed in step 2 into the screw holes of the brush slip ring assembly.
5. Reinstall the brush slip ring assembly in the direction shown in the figure.
6. Tighten the two screws alternately and gradually while pushing both sides of the flange uniformly.
   Tightening torque: 14.7×10^{-2} N•m {1.5 kgf•cm}
7. Insert the flexible board into the connector CN2 on the SE-461 board, then lock the connector.
   Notes
   - Be sure to insert the flexible board into the connector CN2 with unlocked.
     (Refer to **Note** on step 1 for "Unlock".)
   - To lock the connector CN2, press in the slider (white) of the connector.



Tightening torque: 14.7×10^{-2} N•m {1.5 kgf•cm}

Section 6
Spare Parts

6-1. Notes on Repair Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

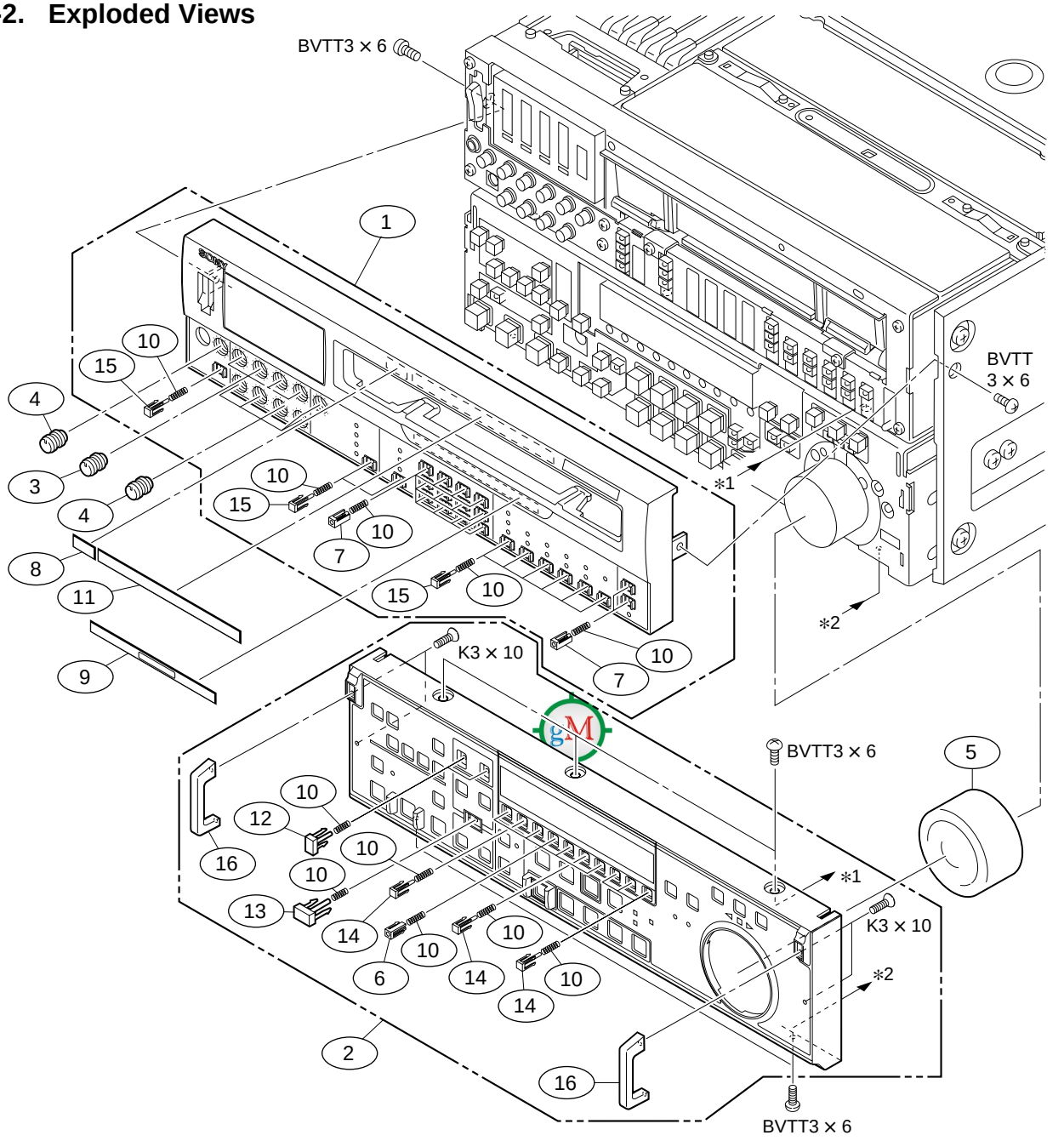
2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

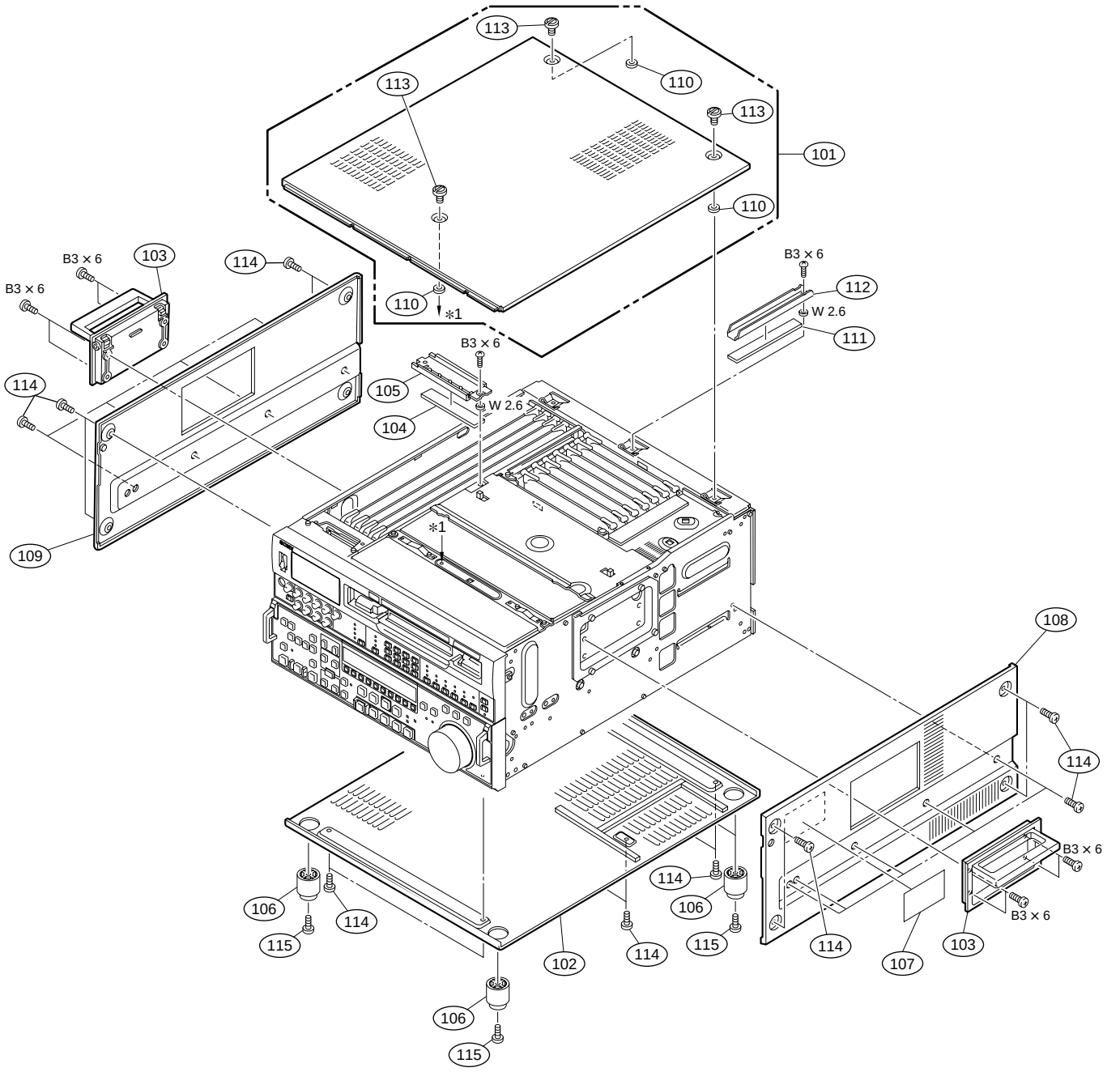
3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

6-2. Exploded Views



No.	Part No.	SP	Description
1	A-8278-848-D	o	PANEL ASSY, FRONT
2	A-8278-849-B	o	PANEL ASSY, KEY
3	X-3167-824-1	o	KNOB ASSY(R), VOL
4	X-3167-825-1	o	KNOB ASSY(P), VOL
5	3-180-633-04	s	RUBBER, DIAL KNOB
6	3-180-822-05	s	KEY TOP 6x6, USE
7	3-180-822-12	s	KEY TOP 6x6, USE
8	3-184-994-03	o	ISR STICKER (S)
9	3-604-813-11	o	A/D LABEL
10	3-611-769-01	s	SPRING, COMPRESSION
11	3-615-781-01	o	LABEL(DNW-A75)
	3-615-782-01	o	LABEL(DNW-A75P)
12	3-615-786-02	s	TOP, KEY 7x11
13	3-615-810-02	s	TOP, KEY 9x16
14	3-696-774-02	s	KEY TOP, 6x6
15	3-696-774-12	o	KEY TOP, 6x6
16	3-717-425-31	o	HANDLE
	7-685-247-19	s	SCREW +K 3x10 TAPPING TYPE2
	7-685-871-09	s	SCREW +BVTT 3x6(S)



No.	Part No.	SP	Description
101	A-8278-844-A	o	LID ASSY, UPPER
102	X-3604-683-3	o	PLATE ASSY, BOTTOM
103	X-3642-018-3	o	HANDLE ASSY
104	3-171-410-01	o	RETAINER(S), PC BOARD
105	3-180-641-01	o	PLATE(L), PC BOARD RETAINER
106	3-604-930-02	s	FOOT, RUBBER
	3-642-656-01	s	FOOT, PLASTIC
107	3-615-215-01	o	CAUTION LABEL, SCREW
108	3-615-773-02	o	CABINET(RIGHT)
109	3-615-774-01	o	CABINET(LEFT)
110	3-688-102-01	o	SPACER, M4

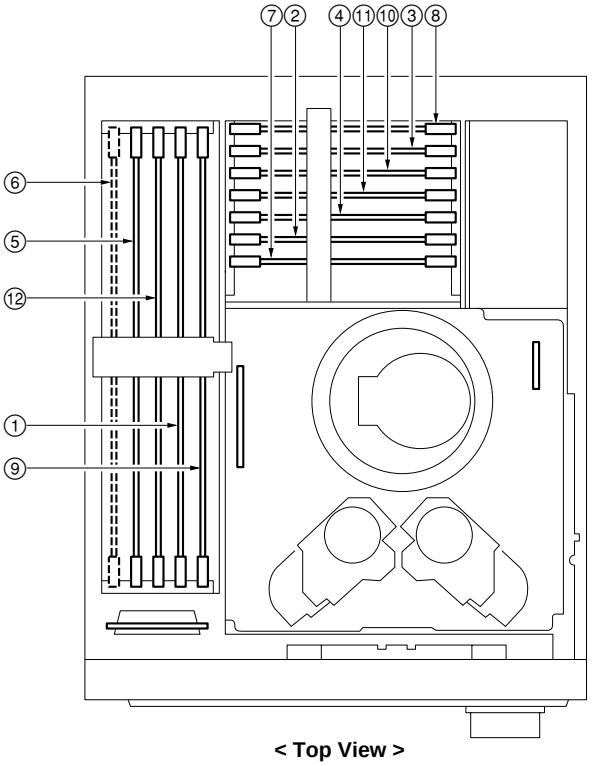
No.	Part No.	SP	Description
111	3-696-882-02	o	CUSHION, PC BOARD RETAINER
112	3-696-887-01	o	RETAINER (S), PC BOARD
113	3-717-392-02	o	SCREW, LID
114	3-733-690-01	s	SCREW +B 4x6
115	7-682-664-09	s	SCREW +PS 4x14 (When the foot made of rubber.)
	7-682-666-09	s	SCREW +PS 4x20 (When the foot made of plastic.)
	7-623-923-11	s	WASHER 2.6x3.0, PLASTIC
	7-682-547-09	s	SCREW +B 3x6

6-3. Plug-in Boards

No.	Board Name	Part No.	SP	Description
1	APR-40	A-8319-241-A	o	MOUNTED CIRCUIT BOARD, APR-40
2	AU-260	A-8319-243-A	o	MOUNTED CIRCUIT BOARD, AU-260 (For DNW-A75)
		A-8319-245-A	o	MOUNTED CIRCUIT BOARD, AU-260P (For DNW-A75P)
3	DEC-110	A-8319-261-A	o	MOUNTED CIRCUIT BOARD, DEC-110
4	DM-89	A-8275-154-B	o	MOUNTED CIRCUIT BOARD, DM-89 (For DNW-A75)
		A-8275-088-B	o	MOUNTED CIRCUIT BOARD, DM-89P (For DNW-A75P)
5	DPR-118 Note)	A-8319-263-A	o	MOUNTED CIRCUIT BOARD, DPR-118
6	DPR-150	–	–	BKNW-124
7	EQ-75	A-8319-273-A	o	MOUNTED CIRCUIT BOARD, EQ-75
8	SDI-41	A-8319-286-A	o	MOUNTED CIRCUIT BOARD, SDI-41
9	SS-83	A-8319-289-A	o	MOUNTED CIRCUIT BOARD, SS-83
10	TBC-23A	A-8319-295-A	o	MOUNTED CIRCUIT BOARD, TBC-23A (For DNW-A75)
		A-8319-297-A	o	MOUNTED CIRCUIT BOARD, TBC-23AP (For DNW-A75P)
11	TBC-24	A-8275-156-A	o	MOUNTED CIRCUIT BOARD, TBC-24 (For DNW-A75)
		A-8275-087-A	o	MOUNTED CIRCUIT BOARD, TBC-24P (For DNW-A75P)
12	VPR-47	A-8319-301-A	o	MOUNTED CIRCUIT BOARD, VPR-47 (For DNW-A75)
		A-8319-303-A	o	MOUNTED CIRCUIT BOARD, VPR-47P (For DNW-A75P)

Notes

- After the plug-in board replacement, the settings of switches and menus, electrical alignments, and oper-ating confirmation are necessary for a new board. Refer to the maintenance manual Part 2 Volume-1.
- This is the part No. for DPR-118 board only, not including the optional board (DPR-119 board).
  When the DPR-118 board is provided with a DPR-119 board (BKNW-118), remove the DPR-119 board from the DPR-118 board before replacing the DPR-118 board to a new DPR-118 board.
- The DPR-150 board is a optional board (BKNW-124). For the optional board, please order the standard products.



< Top View >

6-4. Packing Materials and Supplied Accessories List

Q'ty	Part No.	SP	Description
1pc	3-181-533-02	o	CUSHION (LOWER)
1pc	3-181-534-02	o	CUSHION (UPPER)
1pc	3-181-535-01	o	SPACER (A)
1pc	3-181-536-01	o	SPACER (B)
1pc	3-200-643-01	o	INDIVIDUAL CARTON (for DNW-A75)
	3-200-644-01	o	INDIVIDUAL CARTON (for DNW-A75P)
4pcs	7-682-965-01	s	SCREW +PSW 4x16

Note

DNW-A75 and DNW-A75P do not have their power cord as a supplied accessory.
Refer to Section 6-5.

6-5. Power Cords List

Q'ty	Part No.	SP	Description
<For customers in the U.S.A. and Canada>			
1pc	⚠ 1-557-377-11	s	CORD, POWER
1pc	3-613-640-01	o	HOLDER (C), PLUG (Brown)
<For customers in the United Kingdom>			
1pc	⚠ 1-782-165-11	o	CORD, POWER
1pc	3-613-640-01	o	HOLDER (C), PLUG (Brown)
<For customers in European countries except the United Kingdom>			
1pc	⚠ 1-782-164-11	o	CORD, POWER
1pc	3-613-640-01	o	HOLDER (C), PLUG (Brown)

6-6. Fixtures List

Part No.	SP	Description
J-6035-070-A	o	EXTRACTION TOOL (for PLCC socket)
J-6080-029-A	o	SMALL DENTAL MIRROR (Round type ø12)
J-6086-570-A	o	REFERENCE FLAT PLATE
J-6152-450-A	o	WIRE CLEARANCE CHECK GAUGE SET
J-6251-090-A	o	TORQUE SCREWDRIVER'S HEXAGONAL BIT (d=2.5 mm, l=120 mm)
J-6323-440-A	o	TORQUE SCREWDRIVER'S HEXAGONAL BIT (d=0.89 mm, l=50 mm)
J-6323-420-A	o	TORQUE SCREWDRIVER'S BIT (+2 mm, l=75 mm)
J-6323-430-A	o	TORQUE SCREWDRIVER'S BIT (+3 mm, l=90 mm)
J-6252-510-A	o	TORQUE SCREWDRIVER (6 kg•cm) (0.6 N•m)
J-6252-520-A	o	TORQUE SCREWDRIVER (12 kg•cm) (1.2 N•m)
J-6269-810-A	o	EXTENSION BOARD (S), EX-377
A-8277-211-A	o	EXTENSION BOARD (L), EX-555
A-8277-212-A	o	EXTENSION BOARD (S), EX-556
J-6320-870-A	o	REEL MOTOR SHAFT SLANTNESS CHECK FIXTURE
J-6320-880-A	o	CASSETTE REFERENCE PLATE (L)
J-6322-610-A	o	TAPE GUIDE ADJUSTMENT DRIVER
J-6329-350-A	o	REEL TABLE HEIGHT GAUGE
1-952-684-11	o	EXTENSION CABLE (14P)
A-8321-333-A	o	POWER CABLE ASSEMBLY (for POWER SUPPLY UNIT)
3-184-527-01	o	CLEANING CLOTH (15 cm x 15 cm)
7-432-114-11	o	LOCKING COMPOUND, 1401B (200 g)
7-651-000-10	o	SONY GREASE, SGL-601 (50 g)
7-661-018-18	o	DIAMOND OIL, NT-68 (50 ml)
7-700-736-01	o	L-SHAPED HEXAGONAL WRENCH (d=1.27 mm)
7-700-736-04	o	L-SHAPED HEXAGONAL WRENCH (d=2.5 mm)
7-700-736-05	o	L-SHAPED HEXAGONAL WRENCH (d=1.5 mm)
7-700-736-06	o	L-SHAPED HEXAGONAL WRENCH (d=0.89 mm)
7-700-766-04	o	HEXAGONAL WRENCH DRIVER (d=2.5 mm)
8-960-075-01	o	ALIGNMENT TAPE, SR5-1 (for 525/60 system)
8-960-075-11	o	ALIGNMENT TAPE, SR2-1 (for 525/60 system)
8-960-075-51	o	ALIGNMENT TAPE, SR5-1P (for 625/50 system)
8-960-075-61	o	ALIGNMENT TAPE, SR2-1P (for 625/50 system)
8-960-096-01	o	ALIGNMENT TAPE, CR2-1B (for analog Betacam NTSC)
8-960-096-41	o	ALIGNMENT TAPE, CR5-1B (METAL PARTICLE TAPE) (for analog Betacam NTSC)
8-960-097-44	o	ALIGNMENT TAPE, CR5-2A (OXIDE TAPE) (for analog Betacam NTSC)
8-960-097-45	o	ALIGNMENT TAPE, CR8-1A (OXIDE TAPE) (for analog Betacam NTSC)
8-960-096-51	o	ALIGNMENT TAPE, CR2-1B PS (for analog Betacam PAL)
8-960-096-91	o	ALIGNMENT TAPE, CR5-1B PS (METAL PARTICLE TAPE) (for analog Betacam PAL)
8-960-096-86	o	ALIGNMENT TAPE, CR8-1B PS (METAL PARTICLE TAPE) (for analog Betacam PAL)
8-960-098-44	o	ALIGNMENT TAPE, CR5-2A PS (OXIDE TAPE) (for analog Betacam PAL)
8-960-098-45	o	ALIGNMENT TAPE, CR8-1A PS (OXIDE TAPE) (for analog Betacam PAL)
9-911-053-00	o	THICKNESS GAUGE
9-919-573-01	o	CLEANING LIQUID
J-6332-240-A	o	VISC PHASE ADJUSTING TOOL (for DNW-A75P only)
J-6530-650-A	o	HEAD TIP PROTRUSION MEASUREMENT GAUGE
J-6190-800-A	o	TENSION REGULATOR SLANTNESS CHECK TOOL

Part No.	SP	Description
A-8319-485-A	o	IC MEMORY CARD BOX, CDS-20 ASSEMBLY
1-772-003-11	o	CARD (2 MB), MEMORY
1-772-004-11	o	CARD (4 MB), MEMORY

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Appendix A
Outline of Format

This section describes the recording format, heads configuration and signal processing.

A-1. Outline

Sony DNWseries are 1/2-inch component digital VTRs using a new “Betacam SX” format.

In the Betacam SX format, “MPEG2 4:2:2 Profile @Main Level” is used as a compression system.
Interframe compression technology is first used as VTR format. The data rate is compressed to approximately 1/10 by this technology. The compressed data is then recorded on tape (Note1.
By compressing of the data rate, the S cassette makes continuous recording of 62 minutes possible, and the L cassette makes continuous recording of 194 minutes possible.
Moreover, the data can be recorded on not only the cassette for the Betacam SX but also the metal particle tape for the conventional Betacam SP by Betacam SX format.

This unit enables the high-reliability playback without using a high-precision tracking by the head configuration based on Multiple Tracing technology.

In this unit, the analog tape (oxide and metal particle) recorded based on the Betacam and Betacam SP formats can also be played back. Therefore, current analog Betacam recorded tapes can also be used directly.

Note 1: The audio data is recorded by non-compression.

Multiple Tracing Technology

In the Multiple Tracing technology, the non-tracking technology used for a digital audio tape recorder is applied for VTR. This technology requires no high-precision tracking during recording as well as playback.
For the playback at variable speed, it was necessary changing the drum rotation relative the tape speed or using the dynamic tracking (DT) heads for precision tracking in the past.

In this multiple tracing technology, two playback heads are provided for one recorded track. If one playback head missed the recorded track, the another playback head makes up the complete playback signal.
This technology enables the variable-speed (JOG) playback (−1 to +2 times the normal speed) without using the conventional dynamic tracking (DT) head.

A-2. Recording Format

Footprint

Fig. A-2-1 shows the footprint in the 525/60 system (the top of figure) and the 625/50 system (the bottom of figure) . This figure shows the tape pattern of a Betacam SX at right, and the footprint of a Betacam SP at left, respectively.

Footprint of Helical Track

In the Betacam SX format, two-frame (1 GOP*) video data, system data and four-channel audio data is recorded on ten (525/60 system) or twelve (625/50 system) helical tracks.
*GOP: Group of Pictures
This unit records two helical tracks in pairs. Therefore, the drum rotation is approximately 75 per second (common in 525/60 and 625/50 systems).
In the playback of the Betacam or Betacam SP format, the number of drum rotations is approximately 30 per second (525/60) or 25 per second (625/50) (Note2.
Moreover, the tape speed of the Betacam SX format is lower than that of the Betacam/Betacam SP format by approximately half.
This unit detects whether the tape to be played back is based on the Betacam SX format or Betacam/Betacam SP format by the initial signal of playback, and as a result, the tape is played back by the proper drum rotation and tape speed.

Note 2 : When using Betacam and Betacam SP formats, only simple viewing is possible for tapes recorded in different system.

Reference

The drum diameter of the Betacam SX VTR is larger than that of the Betacam/Betacam SP VTR as approximately 9%.
Therefore the helical track of the Betacam/Betacam SP format is played back with a time-compressed signal as 9%.
(Since the relative speed of the head to tape increases proportionally to the drum diameter even if the drum rotation and the tape speed is made same as the Betacam SX format.)
This playback signal is extended time by a signal processing circuit in the next stage (TBC*), and output.
*TBC: Time Base Corrector

Footprint of Longitudial Track

The footprint of the Betacam SX format has three longitudinal tracks (control track, time code track, and AUX track). These tracks coincide with the footprint of the Betacam/Betacam SP format (except audio CH1 track) .
In this unit, the all longitudinal tracks of the Betacam/Betacam SP format can be played back with additional stationary head (AT head) which play back audio CH1 track of the Betacam/Betacam SP format to the Betacam SX VTR.

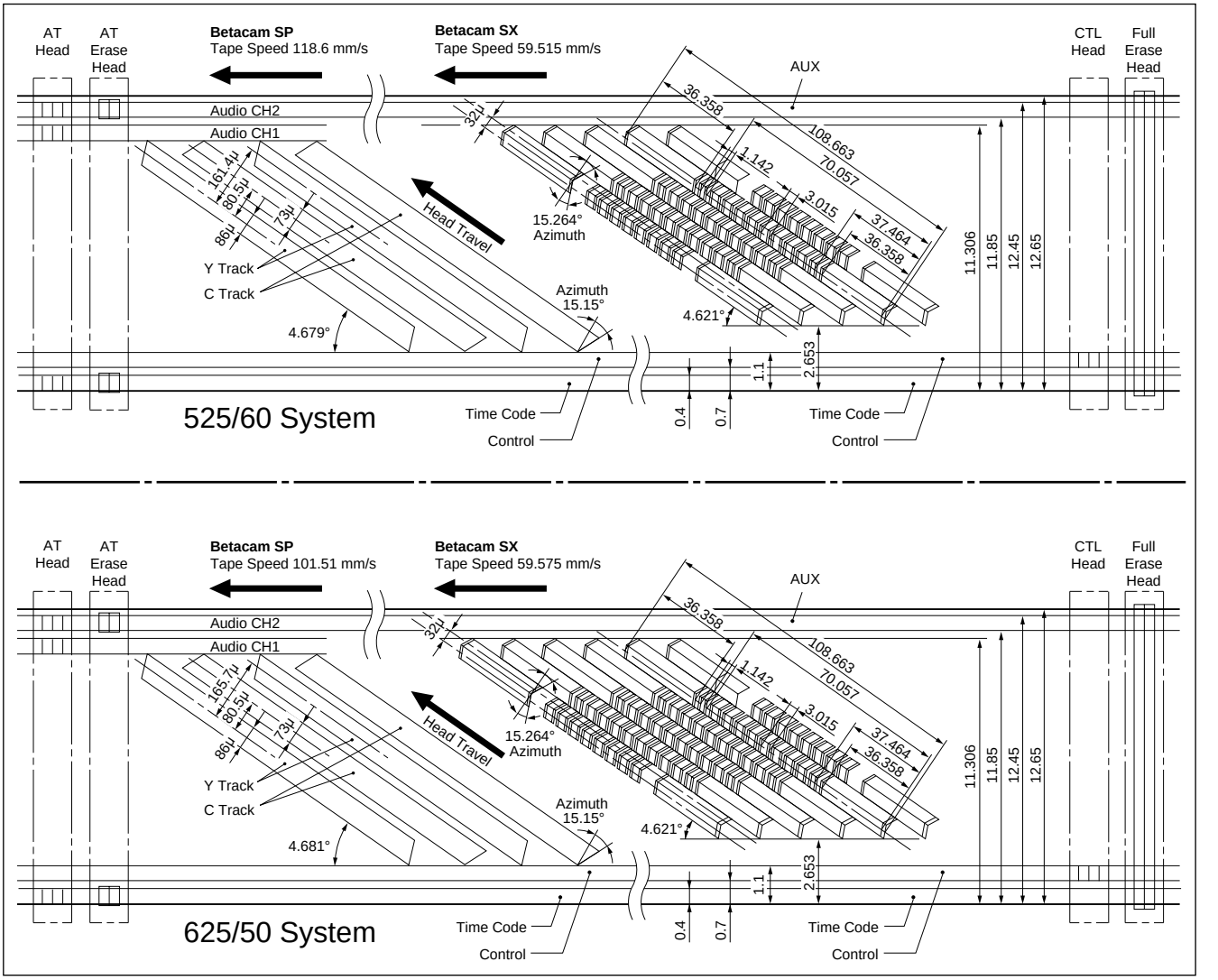

Fig.A-2-1. Footprint

Data Arrangement on Program Tracks

Fig. A-2-2 shows the arrangement of data recorded on helical tracks (program tracks). The size of each sector in the figure is not the actual dimension ratio. For more information on the dimension, refer to Fig. A-2-1.
The Betacam SX format uses an azimuth recording system to perform high-density recording. In other words, two heads with an azimuth angle of approximately 15 degrees in the direction opposite to each other is paired to record two program tracks (tracks A and B) during a turn of the drum. Two-frame (1 GOP) video data and audio data are recorded on ten (525/60) or twelve (625/50) program tracks.

Each program track has eight audio sectors in the center. A pair of video sector and system data is before the audio sectors and the other pair is behind the audio sectors as shown in Fig. A-2-2. Each channel of the audio sectors is arranged in the longitudinal direction of the tape. However, each channel is difficult to be influenced by the longitudinal scratch on tape because it is divided into two sectors. Two-frame video data is dispersed into twenty (525/60) or twenty four (625/50) video sectors for recording, and four-channel audio data is dispersed into twenty (525/60) or twenty four (625/50) audio sectors for recording for every channel. Edit gaps are set between the sectors so that each channel can be edited independently. The control data for executing the Multiple Tracing and the AUX data released for the user are recorded in a system data area.

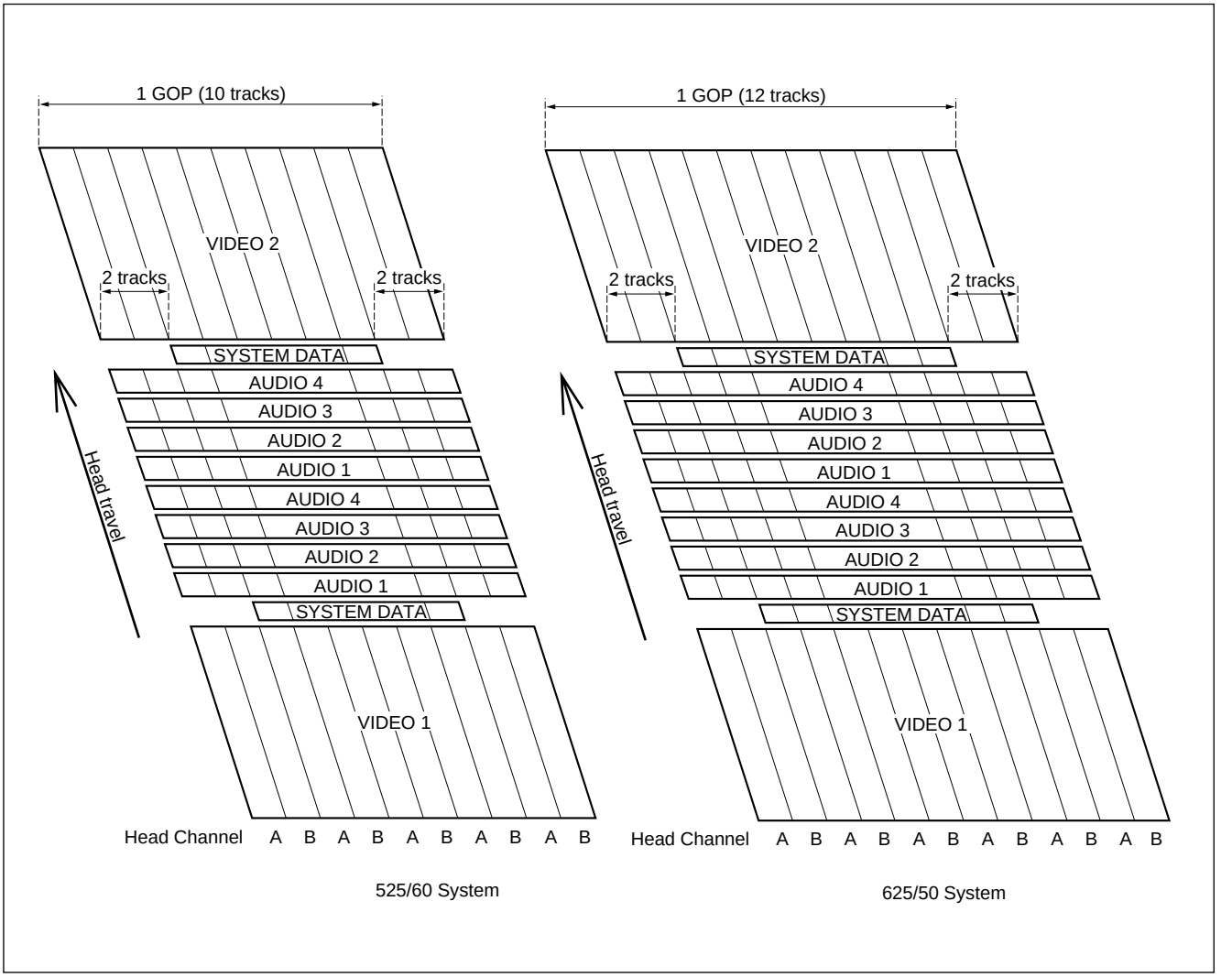

Fig.A-2-2. Data Arrangement on Program Tracks

Longitudinal Tracks of Betacam SX Format

As shown in Fig. A-2-1, a control track, time code track, and AUX track are provided in the longitudinal direction of the tape.

Fig. A-2-3 shows the CTL signal and time code signal, and the timing relation between these signals and video reference signals. The top of the figure is for the 525/60 system, the bottom of the figure is for the 625/50 system.

The CTL signal is recorded by approx. 60 Hz (525/60) or 50 Hz (625/50) rectangular pulse system and controls the start timing of each field data at the rising edge of the pulse. The CTL signal also modulates the duty cycle of the rectangular wave to 65:35 in the first field of a color flame so as to identify the field number and control the color framing.

The time code signal uses a conventional longitudinal time code based on the SMPTE/EBU standard.
One flame consists of 80 bits. Flame number, second, minute, hour, and sync word data items are coded by a biphase mark coding method and recorded for every flame. A user bit is written in time data for recording as a binary group.

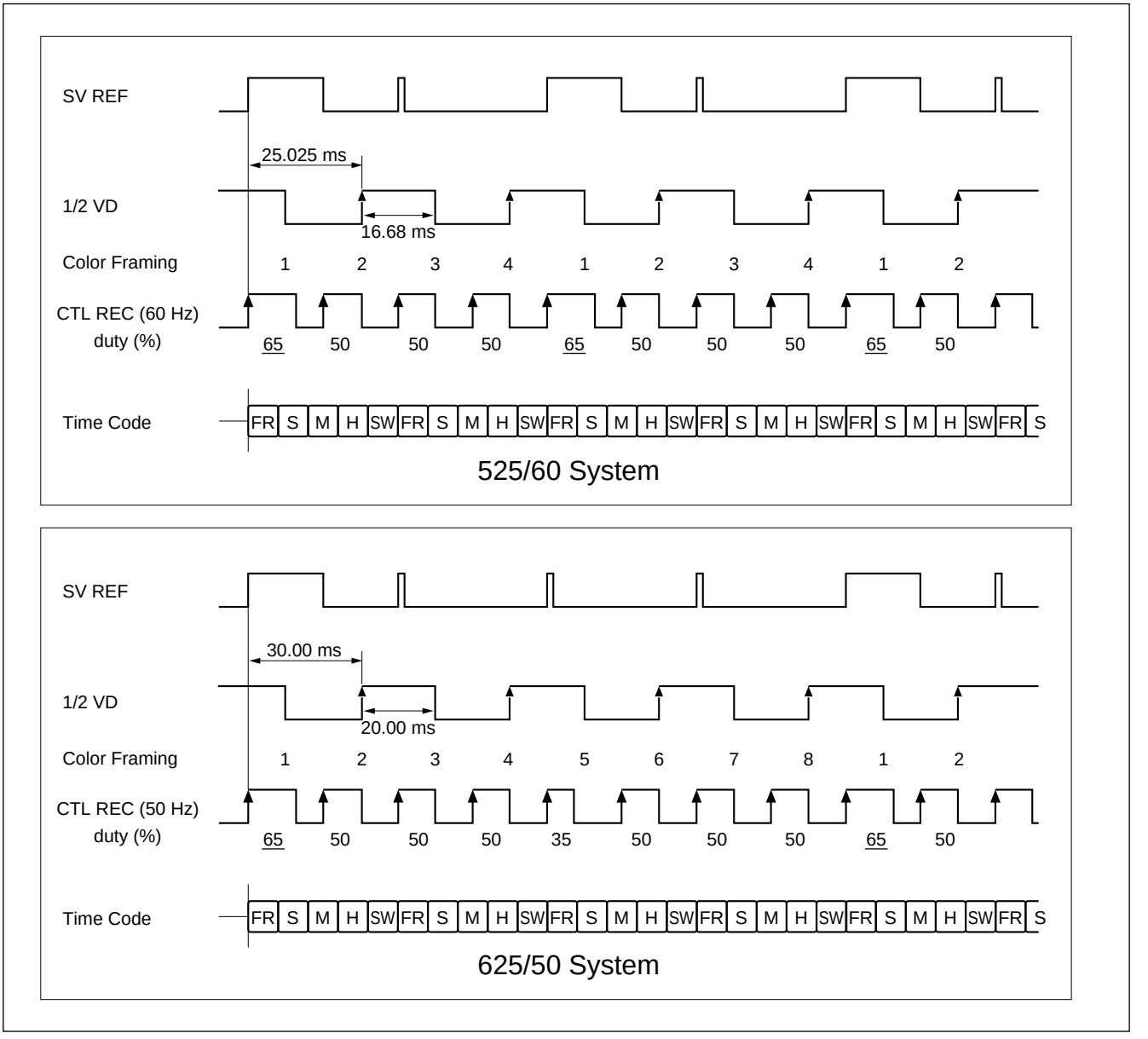
SV REF
25.025 ms
1/2 VD
16.68 ms
Color Framing
1 2 3 4 1 2 3 4 1 2
CTL REC (60 Hz)
duty (%)
65 50 50 50 65 50 50 50 65 50
Time Code
FR S M H SW FR S M H SW FR S M H SW FR S M H SW FR S M H SW FR S
525/60 System
SV REF
30.00 ms
1/2 VD
20.00 ms
Color Framing
1 2 3 4 5 6 7 8 1 2
CTL REC (50 Hz)
duty (%)
65 50 50 50 35 50 50 50 65 50
Time Code
FR S M H SW FR S M H SW FR S M H SW FR S M H SW FR S M H SW FR S M H SW FR S
625/50 System

Fig. A-2-3. Recording Timing Chart of CTL Signal and Time Code Signal

A-3. Head Configuration

Fig. A-3-1 shows the configuration of the stationary and rotary heads in the DNW-A75/A75P, and its top view. However, the rotary heads can be actually viewed only their tips from the side of the drum.
There are two recording heads (A and B) on the rotary drum for the Betacam SX format. The erase head is mounted in the height ahead by 16 tracks than the recording head and erases the recording tracks of A and B channel collectively.
The number of the playback heads on the rotary dum for the Betacam SX format varies depending on the model used.

DNW-A75/A75P has ten playback heads as follows :
ADVANCE heads : 8 heads
(ADV A1, A2, A5, A6, B1, B2, B5, B6)
CONFIDENCE heads : 2 heads (CNF A and B)

Both ADVANCE heads and CONFIDENCE heads are used to play back a tape recorded based on the Betacam SX format. In usual PB mode, the ADVANCE heads are used to play back. In the REC and INSERT modes, the ADVANCE heads play back the signal before erasure as preread, and the CONFIDENCE heads play back a recorded signal to confirm that the signal has been recorded. For that purpose, the ADVANCE heads and the CONFIDENCE heads are installed in the specified height on the rotary drum so that they can trace the before track and after track respectively toward the REC head.

There are four playback heads (two-channel Y/C heads are mounted in pairs at an angle of 180 degrees opposite to each other) for the Betacam and Betacam SP formats. These heads are DT (Dynamic tracking) heads.

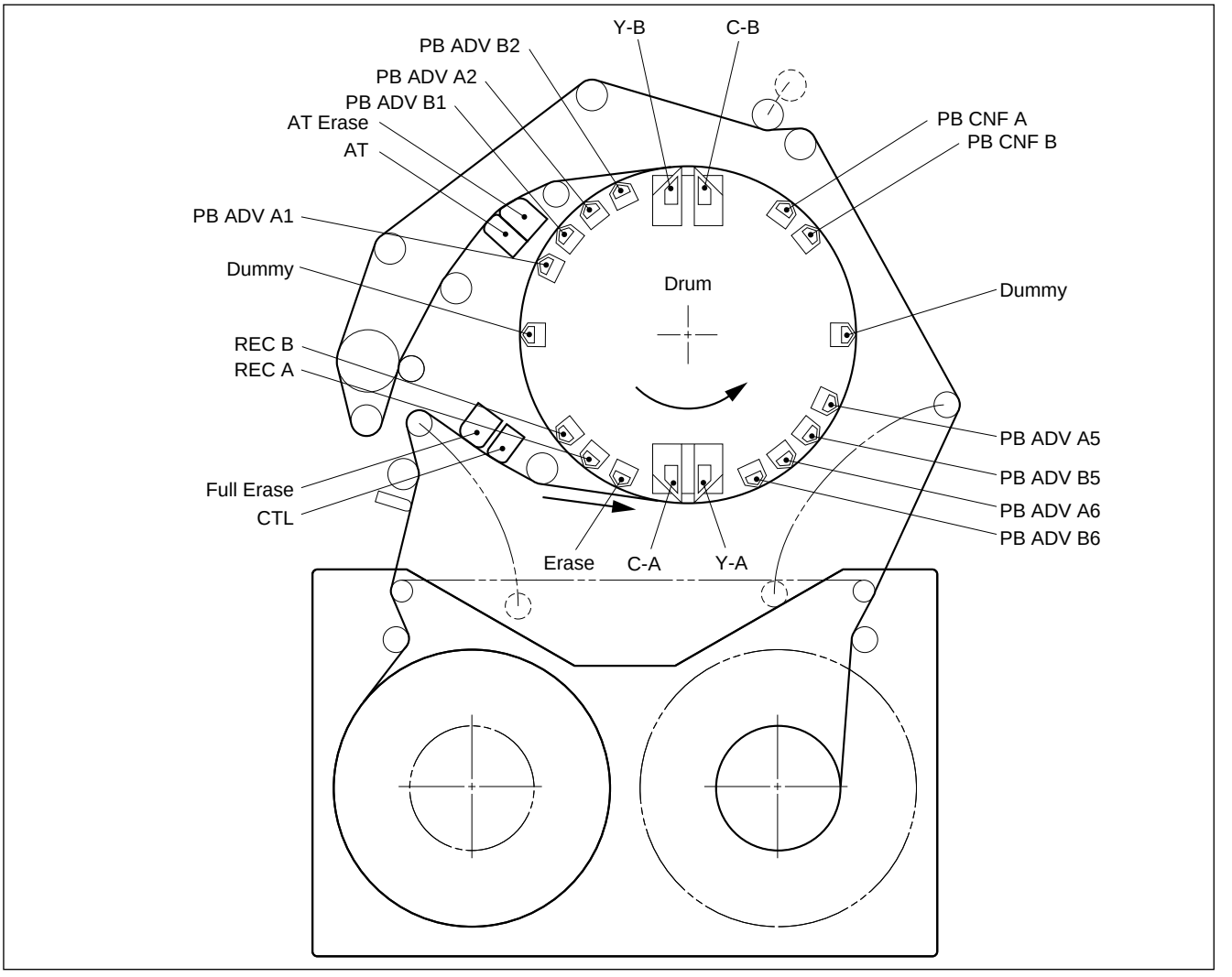

Fig. A-3-1. Configuration and Placement of Stationary Heads and Rotary Heads (DNW-A75/A75P)

A-4. Signal Processing

A-4-1. Compression System of Video Signal

In the Betacam SX format, MPEG2 4:2:2 Profile @Main Level (omitted as MPEG2 4:2:2P@ML hereafter) is employed as the compression system of a video signal. In the MPEG2 4:2:2P@ML coder of this unit, video data is compressed for each GOP (1GOP is two frames) by frame correlation. As a result, video data can be compressed efficiently. In the DNW-A75/A75P, the video data is compressed to approximately 1/10.

A-4-2. Outline of Signal Processing

Reproduction of the Betacam/Betacam SP Tape

The video and audio signals reproduced from the tape based on a Betacam or Betacam SP format are converted into a digital signal. After that, the output data is also sent to the video and audio output terminals after gain adjustment in the Video Processer and Audio Process.
It is possible to output the video data that is compressed using an MPEG2 4:2:2P@ML coder, and integrated with the audio data using an SDTI output interface (option). (Refer to Fig. A-4-1.)

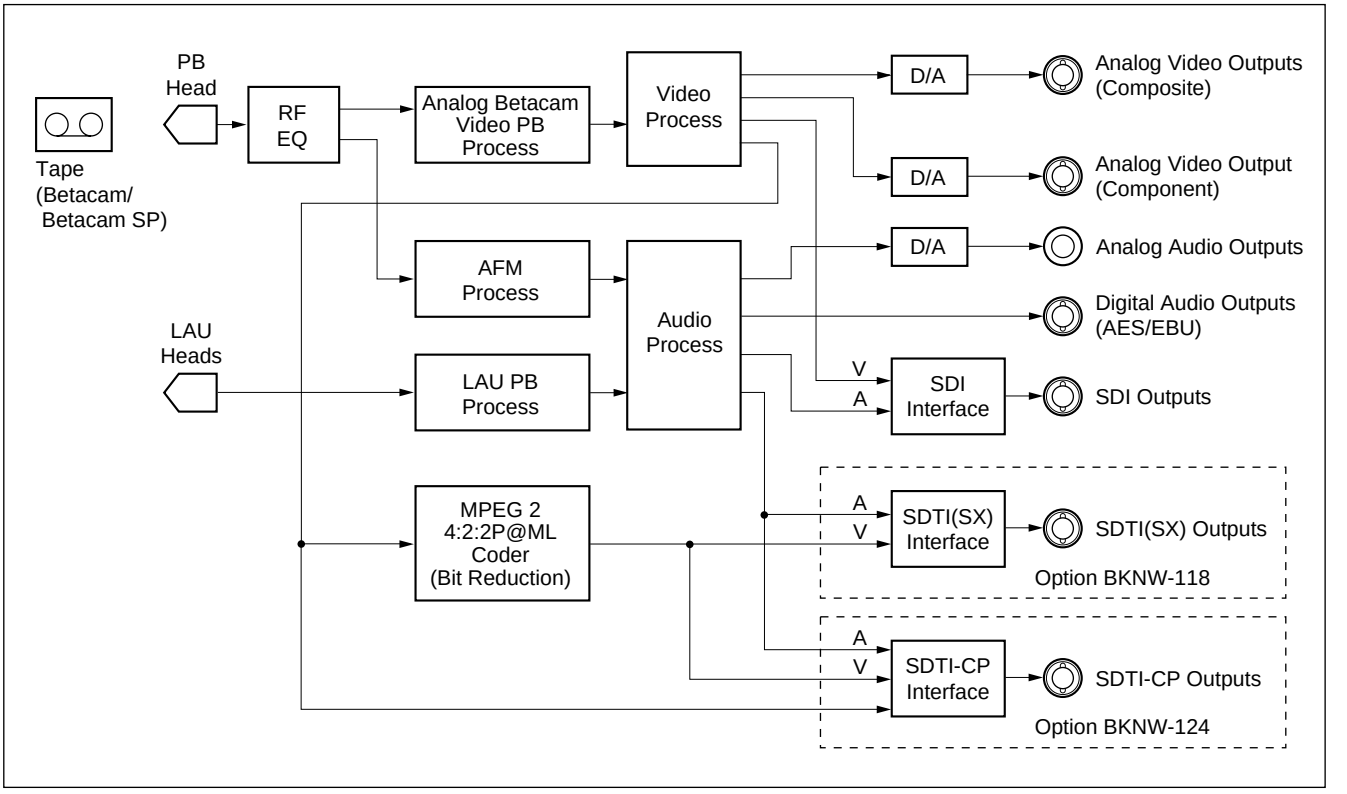

Fig. A-4-1

External Input

Analog or digital video and audio input signals are converted into parallel video data and serial audio data, respectively. (Refer to Fig. A-4-2.)

Recording on the Tape (Betacam SX Format)

Codes are added to the compressed video data and recording-level processed audio data for error correction using an ECC encoder.
The video data and audio data are rearranged in the recording format of the tape so as to add error correction codes (Reed-Solomon product codes). At this time, the shuffling is performed simultaneously. After that, outer ECC data, sync data, ID data, and inner ECC data are added sequentially. Lastly, channel-coded recording serial data is sent to the head and recorded on the tape.
(Refer to Fig. A-4-2.)

The video data and audio data recorded on the tape are gathered together for each GOP (1GOP is two frames) that is a compression unit of video data. The video data and audio data of 1GOP consist of ten tracks (525/60 system) or 12 tracks (625/50 system) on the tape. An error occurring during playback is corrected in this range. Therefore, a higher error correction function can be obtained.

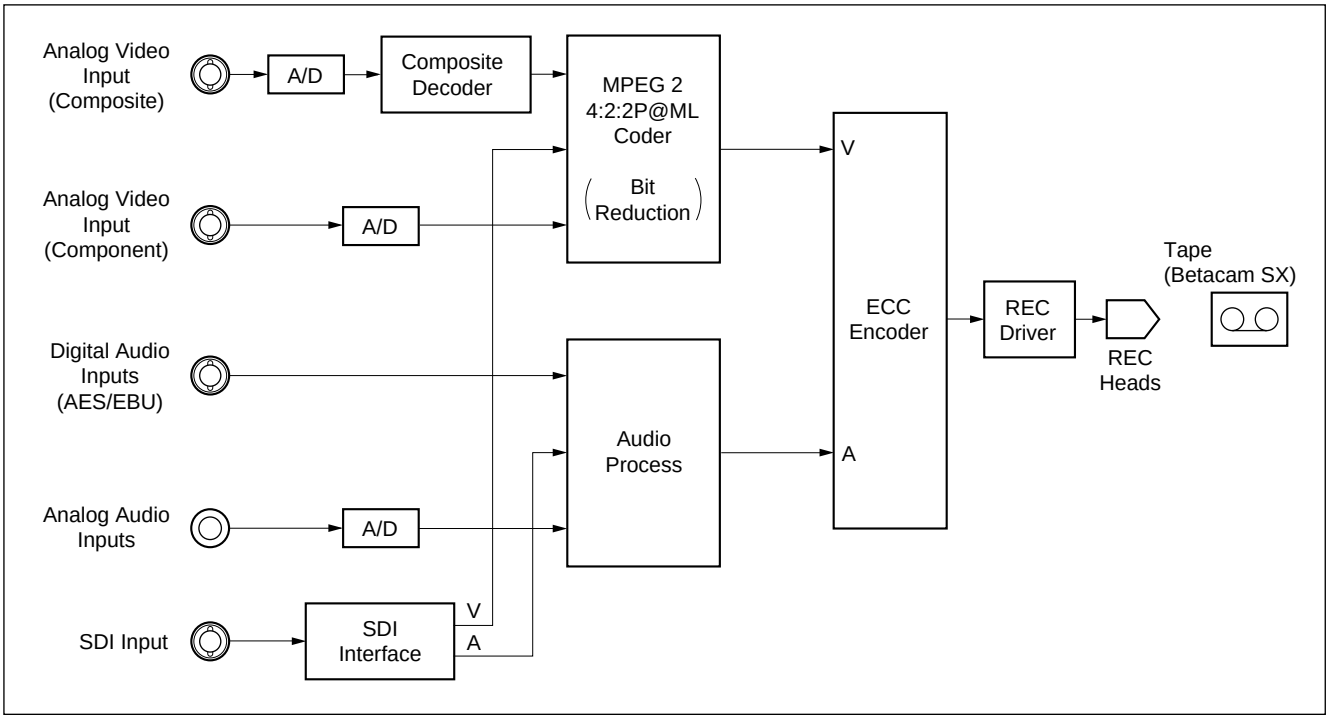

Fig. A-4-2

Playback of Betacam SX Tape

This unit uses multiple-tracing technology in which the number of playback heads is larger than that of recording heads. This technology requires no high-precision tracking.
The data played back by multiple heads is error-corrected using an inner code by an ECC decoder. After that, valid data is selected from memory according to error information and error-corrected using an outer code.
The error-corrected data is separated into the video data and audio data. The video data is demodulated its original bit-rate by the MPEG2 4:2:2P@ML decoder, then it is input to the Video process.
The audio data is directly input to the Audio process after the separation.
(Refer to Fig. A-4-3.)

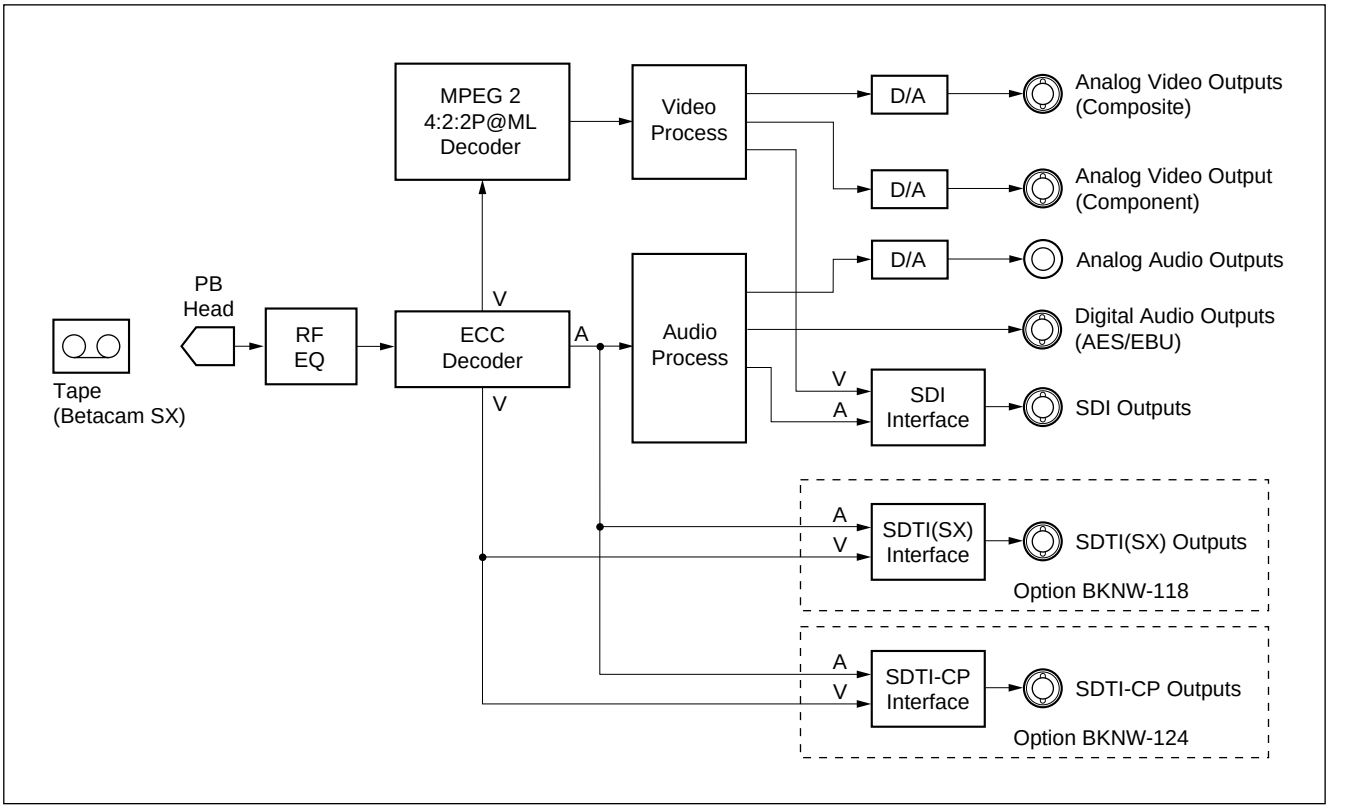

Fig. A-4-3

Appendix B
Setting Check Sheet

It is reccommended to copy these check sheets and write down the setup conditions (switch and so on) under the application.
If the setting is changed temporarily by changing operating condition, the setting can be reset easily.
It is recommended to attach the sheets to the unit when check, maintenance and repair.
If the unit is used frequently by changing the combination of each system, making the sheets are convenient.
(Make use of the check sheets in prevention of setting error.)

Model name: DNW-_____ Serial No.: _____

- Optional hardware

  SDTI output : ☐ Not installed
  ☐ Installed (BKNW-118)
  ☐ Installed (BKNW-124)

- Firmware

  SY1 ROM version: _____
  SY2 ROM version: _____
  SY3 ROM version: _____ (When the BKNW-124 is used.)
  SV1 ROM version: _____
  DT ROM version: _____

- RS-232C baud rate: _____ bps

- Hours meter

  Write down the value of hours meter when checking, servicing, and maintaining.

ITEM	Date	Hours meter
H01: OPERATION HOURS	/	
H02: DRUM RUNNING HOURS	/	
H03: TAPE RUNNING HOURS	/	
H04: THREADING COUNTER	/	
H12: DRUM RUNNING HOURS(Resettable)	/	
H13: TAPE RUNNING HOURS(Resettable)	/	
H14: THREADING COUNTER(Resettable)	/	
H15: TTP FAN OPERATION HOURS(Resettable)	/	

Connector panel

Switch		Factory setting	Setting			
Analog audio input level 600 Ω	CH1	HIGH ON	☐ LOW	☐ HIGH OFF	☐ HIGH ON	
	CH2	HIGH ON	☐ LOW	☐ HIGH OFF	☐ HIGH ON	
	CH3	HIGH ON	☐ LOW	☐ HIGH OFF	☐ HIGH ON	
	CH4	HIGH ON	☐ LOW	☐ HIGH OFF	☐ HIGH ON	
Reference video input 75 Ω		ON	☐ ON	☐ OFF		
Composite video input 75 Ω		ON	☐ ON	☐ OFF		

Upper control panel

Switch		Factory setting	Setting			
VIDEO INPUT		SDI	☐ SDTI (VIDEO & AUDIO)		☐ SDI	
			☐ COMPONENT (Y-R, B)		☐ COMPOSITE	
AUDIO MIXING	CH-1	NOT MIX	☐ NOT MIX	☐ MIX (☐ CH-1	☐ CH-2	☐ CH-3 ☐ CH-4)
	CH-2	NOT MIX	☐ NOT MIX	☐ MIX (☐ CH-1	☐ CH-2	☐ CH-3 ☐ CH-4)
	CH-3	NOT MIX	☐ NOT MIX	☐ MIX (☐ CH-1	☐ CH-2	☐ CH-3 ☐ CH-4)
	CH-4	NOT MIX	☐ NOT MIX	☐ MIX (☐ CH-1	☐ CH-2	☐ CH-3 ☐ CH-4)
AUDIO INPUT	CH-1	ANALOG	☐ SDI	☐ AES/EBU	☐ ANALOG	
	CH-2	ANALOG	☐ SDI	☐ AES/EBU	☐ ANALOG	
	CH-3	ANALOG	☐ SDI	☐ AES/EBU	☐ ANALOG	
	CH-4	ANALOG	☐ SDI	☐ AES/EBU	☐ ANALOG	
AUDIO MONITOR	L	CH-1	☐ CH-1	☐ CH-2	☐ CH-3	☐ CH-4
	R	CH-2	☐ CH-1	☐ CH-2	☐ CH-3	☐ CH-4
TC		AUTO	☐ LTC	☐ AUTO	☐ VITC	
TC GENERATOR		INT	☐ INT	☐ EXT		
		PRESET	☐ PRESET	☐ REGEN		
		REC RUN	☐ FREE RUN	☐ REC RUN		
		DF (525/60)	☐ DF	☐ NDF		
VITC		ON	☐ ON	☐ OFF		
REMOTE 1 (9P)		LOCAL	☐ Lighting (REMOTE)		☐ Lightless (LOCAL)	
REMOTE 2 (50P)		LOCAL	☐ Lighting (REMOTE)		☐ Lightless (LOCAL)	

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Sub control panel

Switch	Factory setting	Setting		
CONTROL PANEL	INT	☐ EXT	☐ INT	
CHARACTER	ON	☐ OFF	☐ ON	
DOLBY NR	ON	☐ OFF	☐ ON	
OUT REF	REF	☐ INPUT VIDEO	☐ REF	
PROCESS CONTROL	LOCAL	☐ REMOTE	☐ MENU	☐ LOCAL
VIDEO	PRESET	☐ PRESET	☐ MANUAL	
CHROMA	PRESET	☐ PRESET	☐ MANUAL	
SET UP/BLACK LEVEL	PRESET	☐ PRESET	☐ MANUAL	
Y/C DELAY	PRESET	☐ PRESET	☐ MANUAL	
CHROMA PHASE	PRESET	☐ PRESET	☐ MANUAL	
REC INHIBIT	OFF	☐ ON	☐ OFF	
KEY INHIBIT	OFF	☐ ON	☐ OFF	
CAPSTAN LOCK	4FD	☐ 2FD	☐ 4FD	☐ 8FD (625/50)

Shorting plugs on the board

Note

Never change the setting of Factory use shorting plugs.

Board	Name	Channel	Ref. No.	Factory setting	Setting			
APR-40	Audio input level	CH1	COR100	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
		CH2	COR200	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
		CH3	COR300	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
		CH4	COR400	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
	Audio input headroom	CH1	COR101	20 dB	☐ 20	☐ 18	☐ 16	
		CH2	COR201	20 dB	☐ 20	☐ 18	☐ 16	
		CH3	COR301	20 dB	☐ 20	☐ 18	☐ 16	
		CH4	COR401	20 dB	☐ 20	☐ 18	☐ 16	
	Audio output level	CH1	COR501	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
		CH2	COR601	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
		CH3	COR701	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
		CH4	COR801	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
	Audio output headroom	CH1	COR500	20 dB	☐ 20	☐ 18	☐ 16	
		CH2	COR600	20 dB	☐ 20	☐ 18	☐ 16	
		CH3	COR700	20 dB	☐ 20	☐ 18	☐ 16	
		CH4	COR800	20 dB	☐ 20	☐ 18	☐ 16	
	Monitor output level	L	COR902	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
		R	COR952	+4 dBm/600 Ω	☐ +4	☐ 0	☐ –3	☐ –20
	Monitor output headroom	L	COR900	20 dB	☐ 20	☐ 18	☐ 16	
		R	COR950	20 dB	☐ 20	☐ 18	☐ 16	
	Variable monitor output level	L	COR901	Fixed (UNITY)	☐ Fixed		☐ Variable	
		R	COR951	Fixed (UNITY)	☐ Fixed		☐ Variable	
SS-83	Factory use		COR100	OPEN	–			
	Factory use		COR101	OPEN	–			

Switches on the board

Note

Never change the setting of Factory use switches.

Board	Switch No.:	Name	Factory setting	Setting
AU-260	S500	: CH-1 head tune	Adjusted condition	–
	S600	: CH-2 head tune	Adjusted condition	–
DM-89	S101	: Y-RF LPF & EQ TEST	NORMAL POSITION	–
	S102	: Factory use	NORMAL POSITION	–
	S301	: C-RF LPF & EQ TEST	NORMAL POSITION	–
	S302	: Factory use	NORMAL POSITION	–
	S501	: Factory use	ON	–
	S901	1 – 4 : Factory use	OFF (OPEN)	–
TBC-23A	S1	1 : Y MUTE	OFF (OPEN)	
		2 : C MUTE	OFF (OPEN)	
		3 : Factory use	OFF (OPEN)	–
		4 : Factory use	OFF (OPEN)	–
		5 : COMB	OFF (OPEN)	
		6 : TBC TEST	OFF (OPEN)	–
		7 : Factory use	OFF (OPEN)	–
		8 : VIDEO PHASE	OFF (OPEN)	
	S500	1 – 4 : Factory use	OFF (OPEN)	–
SS-83	S101	1*1 : FLASH MEMORY	OFF (OPEN)	–
		2 : ANA AUTO-TRACKING	OFF (OPEN)	
		3 : ANA DISABLE	OFF (OPEN)	
		4*2 : SV ERR DISABLE	OFF (OPEN)	–
	S1100	1 : EXTEND MENU	OFF (OPEN)	
		2 : MAINTE MODE	OFF (OPEN)	
		3 : Factory use	OFF (OPEN)	–
		4 : RS232C DEBUG	OFF (OPEN)	
		5 – 8 : Factory use	OFF (OPEN)	–
	S1102	Never change the settings of S1102 switch since each switch is set according to the characteristics of the unit.		
		1, 2 : Factory use	OFF (OPEN)	–
		3 – 6 : Model ID	DNW-A75/A75P / TTV 4075 N/4075 P	
		3	OFF (OPEN) / ON (CLOSE)	–
		4 – 6	OFF (OPEN) / OFF (OPEN)	–
		7 : J/UC	ON (CLOSE)	–
		8 : 525/625	DNW-A75: OFF (OPEN)	–
			DNW-A75P: ON (CLOSE)	–
	S1900	1 – 8 : Factory use	OFF (OPEN)	–
	S2100	1 – 8 : Factory use	OFF (OPEN)	–
	S2701	1 : Factory use	OFF (OPEN)	–
		2 : DT MODE	OFF (OPEN)	
		3, 4 : Factory use	OFF (OPEN)	–

∗1, ∗2: Never change the switches S101-1 and S101-4.

Setup Menu Settings in 525/60 System

Note

When Bank 1 to 4 menu is recalled, the current menu will be overwritten.
Be sure to check the current menu first, before recall Bank 1 to 4.

Main Menu

ITEM-000 series: Operational parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
001:	PREROLL TIME	5S					
002:	CHARACTER H-POSITION	1C					
003:	CHARACTER V-POSITION	57					
004:	SYNCHRONIZE	ON					
005:	DISPLAY INFORMATION SELECT	T&STA					
006:	LOCAL FUNCTION ENABLE	ST&EJ					
007:	TAPE TIMER DISPLAY	+−12H					
008:	MONITORING SELECTION FOR VTR-TO-VTR EDIT	MANU					
009:	CHARACTER TYPE	WHITE					
011:	CHARACTER V-SIZE	×1					
013*1:	525/625 SYSTEM SELECT	OFF	–	–	–	–	–

∗1: ITEM-013 is no relation with Bank.

ITEM-B00 series: Menu bank parameter

This series is not necessary to write down the setting.
All settings of B00 series are OFF on the normal state. Set to ON only when ITEM is carried out.
After finishing, all settings of B00 series return to OFF automatically.

ITEM	Factory setting
B01: RECALL BANK 1	OFF
B02: RECALL BANK 2	OFF
B03: RECALL BANK 3	OFF
B04: RECALL BANK 4	OFF
B11: SAVE BANK 1	OFF
B12: SAVE BANK 2	OFF
B13: SAVE BANK 3	OFF
B14: SAVE BANK 4	OFF
B20: RESET SETUP	OFF

Extended Menu

ITEM-100 series: Operational panel parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE		DIAL					
102: MAXIMUM SPEED		MAX					
103: AUDIO SELECTED LINE OUT		MANU					
104: AUDIO MUTING TIME		OFF					
105: REFERENCE SYSTEM ALARM		ON					
106: CAPSTAN LOCK		SW					
107: REC INHIBIT LAMP FLASHING		OFF					
108: AUTO EE SELECT		S/F/R					
109: FORCED EE WHEN TAPE UNTHREAD		ON					
111: TSO/FEED PLAY		DIS					
115: PHASE LOCK IN VARIABLE X3		OFF					
116: JOG DIAL RESPONSE		TYPE1					
117: CONTROL PANEL SELECTION		SW					
118: KEY INHIBIT SWITCH EFFECTIVE AREA							
SUB-ITEM	1:REMOTE SELECT	DIS					
	2: MON./INPUT SEL	DIS					
	3: CONTROL PANEL	DIS					
119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL		OFF					
120: CTL LOCK IN VAR/SHTL		OFF					
122: AUTO EE WITH ANALOG TAPE		DIS					

ITEM-200 series: Remote interface parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
201: PARA RUN	DIS					

ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
301: VAR SPEED RANGE FOR SYNCHRONIZATION	–1~+2					
302: CAPSTAN RE-LOCKING DIRECTION	DECEL					
305: SYNC GRADE	ACCUR					
306: DMC INITIAL SPEED	MANU					
307: AUTO-DELETION FOR INCONSISTENT DATA	MANU					
308: SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN	AUTO					
309: SERVO/AV REFERENCE SEL	AUTO1					
310: REC INHIBIT	ALL					

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
311: ANALOG AUDIO EDIT PRESET REPLACE FOR CH1	CH 1					
312: ANALOG AUDIO EDIT PRESET REPLACE FOR CH2	CH 2					
313: ANALOG AUDIO EDIT PRESET REPLACE FOR CH3	NODEF					
314: ANALOG AUDIO EDIT PRESET REPLACE FOR CH4	NODEF					
317: AUDIO EDIT MODE	CROSS					
318: EDIT RETRY	ON					
319: PREREAD SELECT	A/V					
320: DIGITAL AUDIO PB PROCESS ON EDIT POINT	FADE					
326: AUTOMATIC IN ENTRY AFTER AUTO EDIT	OFF					

ITEM-400 series: Preroll parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
401: FUNCTION MODE AFTER CUE-UP	STOP					
402: TIME REFERENCE FOR PREROLL	CTL					
403: AUTOMATIC PREROLL REFERENCE ENTRY	DIS					
405: CUE-UP BY CTL	CAP					

ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					
502: TAPE PROTECTION MODE FROM SEARCH	STEP					
503: TAPE PROTECTION MODE FROM STOP	STDBY					
504: DRUM ROTATION IN STANDBY OFF	OFF					
505: STILL TENSION	NORM					

ITEM-600 series: Time code generator parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
601: VITC POSITION SEL-1	16H					
602: VITC POSITION SEL-2	18H					
603[*1]: ID CODE PRESET	OFF	–	–	–	–	–
604: ID CODE SW	OFF					
605: TCG REGEN MODE	TC&UB					
606: TC OUTPUT SIGNAL IN REGEN MODE	TAPE					
607: U-BIT BINARY GROUP FLAG	000					
608: PHASE CORRECTION	OFF					
609: TCG CF FLAG	OFF					
610: REGEN CONTROL MODE	AS&IN					
616: SDTI-CP OUTPUT LTC OVERRIDE (When BKNW-124 is used only.)	DIS					

∗1: ITEM-603 is no relation with Bank.

ITEM-700 series: Video control parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
701: SELECTION OF VIDEO DELAY/SYNC DELAY		SYNC					
703: BLANK LINE SELECT							
SUB-ITEM	0: All line	–––					
	12: 12 line	BLANK					
	13: 13 line	BLANK					
	14: 14 line	BLANK					
	15: 15 line	BLANK					
	16: 16 line	BLANK					
	17: 17 line	BLANK					
	18: 18 line	BLANK					
	19: 19 line	BLANK					
	20: 20 line	BLANK					
704: DECODE Y/C SEP MODE							
SUB-ITEM	12: 12 line	B&W					
	13: 13 line	B&W					
	14: 14 line	B&W					
	15: 15 line	B&W					
	16: 16 line	B&W					
	17: 17 line	B&W					
	18: 18 line	B&W					
	19: 19 line	B&W					
	20: 20 line	B&W					
	21: 21 line	COMB					
	22: 22 line	COMB					
705: EDGE SUBCARRIER REDUCER MODE		AUTO					
706: VERTICAL BLANKING V SHIFT		ON					
707: FORCED VERTICAL INTERPOLATION OFF		AUTO					
709: CAV LEVEL FORMAT							
SUB-ITEM	0: INPUT CAV LEVEL	B-CAM					
	1: OUTPUT CAV LEVEL	B-CAM					
710: INTERNAL VIDEO SIGNAL GENERATOR		CB75					
712: VIDEO PROCESS ON CAP LOCK 2FIELD		OFF					
713: VIDEO SETUP REFERENCE LEVEL							
SUB-ITEM	0: MASTER LEVEL	7.5%					
	1: INPUT LEVEL	MSTER					
	2: VBLK REMOVE CNT	THROU					
	3: BETACAM PB LEVEL	MSTER					
	4: OUTPUT LEVEL	MSTER					

(Continued)

ITEM-700 series (Continued)

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
714: VIDEO ADJUST RANGE		–3~+3					
715: VIDEO GAIN CONTROL		800H					
716: CHROMA GAIN CONTROL		800H					
717: CHROMA PHASE CONTROL		80H					
718: SETUP LEVEL		110H					
719: SYSTEM PHASE SYNC		80H					
720: SYSTEM PHASE SC		0H					
721: Y/C DELAY		800H					
723: INPUT VIDEO BLANK							
SUB-ITEM	0: All line	–––					
	12: 12 line	THROU					
	13: 13 line	THROU					
	14: 14 line	THROU					
	15: 15 line	THROU					
	16: 16 line	THROU					
	17: 17 line	THROU					
	18: 18 line	THROU					
	19: 19 line	THROU					
	20: 20 line	THROU					
726: H BLANKING WIDTH		NAROW					
727: VIDEO EDIT PREVIEW SWITCHER		INT					
728: OUTPUT SCH PHASE		800H					

ITEM-800 series: Audio control parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
803: DIGITAL AUDIO FADE TIME	10MS					
805: AUDIO MONITOR OUTPUT MIXING	RMS					
806: LEVEL METER SCALE	PEAK 0					
807: AUDIO OUTPUT PHASE	80					
808: INTERNAL AUDIO SIGNAL GENERATOR	OFF					
809: AUDIO LEVEL METER DIMMER CONTROL	0					
810: AUDIO EDIT PREVIEW SWITCHER	INT					
815: AUDIO SAMPLING RATE CONVERTER	OFF					
817: EMPHASIS	OFF					

ITEM-900 series: Digital process parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
903: FREEZE MODE	FIELD					
904: FREEZE CONTROL FROM KEY PANEL	MOMNT					
905: AUTO FREEZE CONTROL	DIS					
906: STOP FREEZE CONTROL	DIS					
911: NO COMPRESSION LINE	OFF					
914: SDTI-CP OUTPUT BIT RATE (When BKNW-124 is used only.)	50I					
915: SDTI-CP OUTPUT FORWARD ERROR CORRECTION (When BKNW-124 is used only.)	ON					

ITEM-F00 series: Adjustment use only

This series is not necessary to setting.
In the normal operation, use the factory settings.

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE	ON					
F02: EMERGENCY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F16: DEVICE TYPE MODIFY	0					
F21: PROCESS CONT VR	ON*					
F25: SERVO/AV REF SEL IN PREREAD MODE	OFF					
F34: STOP PINCH OFF TIME	5M					
F35: AUDIO DITHER	ON					

*: When the SY1 ROM's version is earlier than 1.33, the ITEM-F21's factory setting is "OFF".

ITEM-G00 series: Shot mark operation parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
G01: SEARCH TYPE SELECT		ALL					
G02: LISTING TYPE SELECT							
SUB-ITEM	REC START MARK	ON					
	SHOT MARK 1	ON					
	SHOT MARK 2	ON					
	POST MARK	ON					
G03: REC START MARK MODE							
SUB-ITEM	CRASH REC	ON					
	ASSEMBLE	ON					
	INSERT	OFF					
G04: MARK SELECT IN REC/ASSEMBLE		SHOT1					

Setup Menu Settings in 625/50 System

Note

When Bank 1 to 4 menu is recalled, the current menu will be overwritten.
Be sure to check the current menu first, before recall Bank 1 to 4.

Main Menu

ITEM-000 series: Operational parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
001:	PREROLL TIME	5S					
002:	CHARACTER H-POSITION	19					
003:	CHARACTER V-POSITION	5D					
004:	SYNCHRONIZE	ON					
005:	DISPLAY INFORMATION SELECT	T&STA					
006:	LOCAL FUNCTION ENABLE	ST&EJ					
007:	TAPE TIMER DISPLAY	+−12H					
008:	MONITORING SELECTION FOR VTR-TO-VTR EDIT	MANU					
009:	CHARACTER TYPE	WHITE					
011:	CHARACTER V-SIZE	×1					
013*1:	525/625 SYSTEM SELECT	OFF	–	–	–	–	–

∗1: ITEM-013 is no relation with Bank.

ITEM-B00 series: Menu bank parameter

This series is not necessary to write down the setting.
All settings of B00 series are OFF on the normal state. Set to ON only when ITEM is carried out.
After finishing, all settings of B00 series return to OFF automatically.

ITEM	Factory setting
B01: RECALL BANK 1	OFF
B02: RECALL BANK 2	OFF
B03: RECALL BANK 3	OFF
B04: RECALL BANK 4	OFF
B11: SAVE BANK 1	OFF
B12: SAVE BANK 2	OFF
B13: SAVE BANK 3	OFF
B14: SAVE BANK 4	OFF
B20: RESET SETUP	OFF

Extended Menu

ITEM-100 series: Operational panel parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE		DIAL					
102: MAXIMUM SPEED		MAX					
103: AUDIO SELECTED LINE OUT		MANU					
104: AUDIO MUTING TIME		OFF					
105: REFERENCE SYSTEM ALARM		ON					
106: CAPSTAN LOCK		SW					
107: REC INHIBIT LAMP FLASHING		OFF					
108: AUTO EE SELECT		S/F/R					
109: FORCED EE WHEN TAPE UNTHREAD		ON					
111: TSO/FEED PLAY		DIS					
115: PHASE LOCK IN VARIABLE X3		OFF					
116: JOG DIAL RESPONSE		TYPE1					
117: CONTROL PANEL SELECTION		SW					
118: KEY INHIBIT SWITCH EFFECTIVE AREA							
SUB-ITEM	1:REMOTE SELECT	DIS					
	2: MON./INPUT SEL	DIS					
	3: CONTROL PANEL	DIS					
119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL		OFF					
120: CTL LOCK IN VAR/SHTL		OFF					
122: AUTO EE WITH ANALOG TAPE		DIS					

ITEM-200 series: Remote interface parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
201: PARA RUN	DIS					
202: CF FLAG REPLY	8F					

ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
301: VAR SPEED RANGE FOR SYNCHRONIZATION	–1~+2					
302: CAPSTAN RE-LOCKING DIRECTION	ACCEL					
305: SYNC GRADE	ACCUR					
306: DMC INITIAL SPEED	MANU					
307: AUTO-DELETION FOR INCONSISTENT DATA	MANU					
308: SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN	AUTO					
309: SERVO/AV REFERENCE SEL	AUTO1					
310: REC INHIBIT	ALL					

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ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
311: ANALOG AUDIO EDIT PRESET REPLACE FOR CH1	CH 1					
312: ANALOG AUDIO EDIT PRESET REPLACE FOR CH2	CH 2					
313: ANALOG AUDIO EDIT PRESET REPLACE FOR CH3	NODEF					
314: ANALOG AUDIO EDIT PRESET REPLACE FOR CH4	NODEF					
317: AUDIO EDIT MODE	CROSS					
318: EDIT RETRY	ON					
319: PREREAD SELECT	A/V					
320: DIGITAL AUDIO PB PROCESS ON EDIT POINT	FADE					
326: AUTOMATIC IN ENTRY AFTER AUTO EDIT	OFF					

ITEM-400 series: Preroll parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
401: FUNCTION MODE AFTER CUE-UP	STOP					
402: TIME REFERENCE FOR PREROLL	CTL					
403: AUTOMATIC PREROLL REFERENCE ENTRY	DIS					
405: CUE-UP BY CTL	CAP					

ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					
502: TAPE PROTECTION MODE FROM SEARCH	STEP					
503: TAPE PROTECTION MODE FROM STOP	STDBY					
504: DRUM ROTATION IN STANDBY OFF	OFF					
505: STILL TENSION	NORM					

ITEM-600 series: Time code generator parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
601: VITC POSITION SEL-1	19H					
602: VITC POSITION SEL-2	21H					
603*1: ID CODE PRESET	OFF	–	–	–	–	–
604: ID CODE SW	OFF					
605: TCG REGEN MODE	TC&UB					
606: TC OUTPUT SIGNAL IN REGEN MODE	TAPE					
607: U-BIT BINARY GROUP FLAG	000					
608: PHASE CORRECTION	OFF					
609: TCG CF FLAG	OFF					
610: REGEN CONTROL MODE	AS&IN					
616: SDTI-CP OUTPUT LTC OVERRIDE (When BKNW-124 is used only.)	DIS					

∗1: ITEM-603 is no relation with Bank.

ITEM-700 series: Video control parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
701: SELECTION OF VIDEO DELAY/SYNC DELAY		SYNC					
703: BLANK LINE SELECT							
SUB-ITEM	0: All line	−−−					
	9: 9,322 line	BLANK					
	10: 10,323 line	BLANK					
	11: 11,324 line	BLANK					
	12: 12,325 line	BLANK					
	13: 13,326 line	BLANK					
	14: 14,327 line	BLANK					
	15: 15,328 line	BLANK					
	16: 16,329 line	BLANK					
	17: 17,330 line	BLANK					
	18: 18,331 line	BLANK					
	19: 19,332 line	BLANK					
	20: 20,333 line	BLANK					
	21: 21,334 line	BLANK					
	22: 22,335 line	BLANK					
	23: 23 line	HALF					
704: DECODER Y/C SEP MODE							
SUB-ITEM	9: 9,322 line	B&W					
	10: 10,323 line	B&W					
	11: 11,324 line	B&W					
	12: 12,325 line	B&W					
	13: 13,326 line	B&W					
	14: 14,327 line	B&W					
	15: 15,328 line	B&W					
	16: 16,329 line	B&W					
	17: 17,330 line	B&W					
	18: 18,331 line	B&W					
	19: 19,332 line	B&W					
	20: 20,333 line	B&W					
	21: 21,334 line	B&W					
	22: 22,335 line	B&W					
705: EDGE SUBCARRIER REDUCER MODE		AUTO					
706: VERTICAL BLANKING V SHIFT		ON					
707: FORCED VERTICAL INTERPOLATION OFF		AUTO					
710: INTERNAL VIDEO SIGNAL GENERATOR		CB100					
712: VIDEO PROCESS ON CAP LOCK 2FIELD		OFF					

(Continued)

ITEM-700 series (Continued)

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
714: VIDEO ADJUST RANGE		−3~+3					
715: VIDEO GAIN CONTROL		800H					
716: CHROMA GAIN CONTROL		800H					
717: CHROMA PHASE CONTROL		80H					
718: BLACK LEVEL		110H					
719: SYSTEM PHASE SYNC		80H					
720: SYSTEM PHASE SC		0H					
721: Y/C DELAY		800H					
723: INPUT VIDEO BLANK							
SUB-ITEM	0: All line	−−−					
	9: 9,322 line	THROU					
	10: 10,323 line	THROU					
	11: 11,324 line	THROU					
	12: 12,325 line	THROU					
	13: 13,326 line	THROU					
	14: 14,327 line	THROU					
	15: 15,328 line	THROU					
	16: 16,329 line	THROU					
	17: 17,330 line	THROU					
	18: 18,331 line	THROU					
	19: 19,332 line	THROU					
	20: 20,333 line	THROU					
	21: 21,334 line	THROU					
	22: 22,335 line	THROU					
726: H BLANKING WIDTH		NAROW					
727: VIDEO EDIT PREVIEW SWITCHER		INT					
728: OUTPUT SCH PHASE		800H					

ITEM-800 series: Audio control parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
803: DIGITAL AUDIO FADE TIME	10MS					
805: AUDIO MONITOR OUTPUT MIXING	RMS					
806: LEVEL METER SCALE	PEAK 0					
807: AUDIO OUTPUT PHASE	80					
808: INTERNAL AUDIO SIGNAL GENERATOR	OFF					
809: AUDIO LEVEL METER DIMMER CONTROL	0					
810: AUDIO EDIT PREVIEW SWITCHER	INT					
815: AUDIO SAMPLING RATE CONVERTER	OFF					
817: EMPHASIS	OFF					

ITEM-900 series: Digital process parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
903: FREEZE MODE	FIELD					
904: FREEZE CONTROL FROM KEY PANEL	MOMNT					
905: AUTO FREEZE CONTROL	DIS					
906: STOP FREEZE CONTROL	DIS					
911: NO COMPRESSION LINE	OFF					
914: SDTI-CP OUTPUT BIT RATE (When BKNW-124 is used only.)	50I					
915: SDTI-CP OUTPUT FORWARD ERROR CORRECTION (When BKNW-124 is used only.)	ON					

ITEM-F00 series: Adjustment use only

This series is not necessary to setting.
In the normal operation, use the factory settings.

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE	ON					
F02: EMERGENCY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F16: DEVICE TYPE MODIFY	0					
F21: PROCESS CONT VR	ON*					
F25: SERVO/AV REF SEL IN PREREAD MODE	OFF					
F34: STOP PINCH OFF TIME	5M					
F35: AUDIO DITHER	ON					

*: When the SY1 ROM's version is earlier than 1.33, the ITEM-F21's factory setting is "OFF".

ITEM-G00 series: Shot mark operation parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
G01: SEARCH TYPE SELECT		ALL					
G02: LISTING TYPE SELECT							
SUB-ITEM	REC START MARK	ON					
	SHOT MARK 1	ON					
	SHOT MARK 2	ON					
	POST MARK	ON					
G03: REC START MARK MODE							
SUB-ITEM	CRASH REC	ON					
	ASSEMBLE	ON					
	INSERT	OFF					
G04: MARK SELECT IN REC/ASSEMBLE		SHOT1					

Appendix C
Circuit Description and Overall Block Diagram

The following block diagrams are explained after circuit description.

• Overall (1/3) : Signal Processing System C-8
• Overall (2/3) : System/Servo Control System (1/2) C-10
• Overall (3/3) : System/Servo Control System (2/2) and DT control System C-12

(1) Video Signal Processing System (CP-334, DEC-110, SDI-41, and VPR-47 Boards)

Recording system

The inputted analog composite video signal and the inputted analog component video signal from the VIDEO INPUT connectors are sent from the CP-334 board to the DEC-110 board and converted from analog to digital. After that, the analog composite video signal is converted into a digital component signal (parallel) by the composite decode block, and the analog component video signal into a digital component signal (serial) by the multiplexer.
Only the digital component signal selected as a video input signal is sent from the DEC-110 board to the input TBC block on the SDI-41 board.
The inputted SDI signal from the SDI INPUT connector is inputted to the SDI-41 board and converted from serial to parallel. After that, in an SDI decode block, an SDI video signal is extracted, and EAV, SAV, video index, etc are detected.
The SDI video signal is also sent to the input TBC block on the SDI-41 board.
The input TBC block on the SDI-41 board makes an input video signal (the SDI video signal or the digital component signal from the DEC-110 board) synchronize with the reference internal clock of this unit.
The input video signal output from the input TBC block is sent to the VPR-47 board through setup remove and VITC generation blocks.
The setup remove block removes a setup level only when an input video is in the 525/60 mode.
The VITC generation block reads VITC and sets data for recording.
The input video signal sent to the VPR-47 board is sent through a frame control block to the DPR-118 board as REC data. The input video signal is also sent to the video processing block as EE data (E-E video signal).

Playback system

A Betacam SX video PB signal is reconstructed on the DPR-118 board. After that, the signal is sent to the video processing block through a video jog processing block.
After an analog Betacam video PB signal is reconstructed on the DM-89, TBC-24, and TBC-23A boards, it is sent to the video processing block on the VPR-47 board.
The video jog processing block converts the signal sent intermittently in the VAR/JOG PB mode into a continuous signal. In addition to the Betacam SX video signal or analog Betacam (Betacam/Betacam SP) video PB signal described above, the E-E video signal is also input to the video processing block.
The SX video PB signal (signal output from the video jog processing block) or analog Betacam video PB signal is also input to the freeze memory block. The video data memorized in the freeze memory block is read in the freeze mode and input to the video processing block.
Each processing (gain adjustment, chroma phase adjustment, blanking addition, and line adder) is performed in the video processing block. The obtained information is sent to an encode block as the PB video signal (digital component video signal).
And when playing back the analog Betacam video PB only, the PB video signal input is also send to a frame control block as the SDTI outputs (optional BKNW-118/124). On the DPR-118 board, the bit rate of the PB video signal output from the frame control block is compressed into 1/10. After that, the compressed signal is sent to the DPR-119 board of BKNW-118 or DPR-150 board of BKNW-124.

(Playback system of Video signal processing system)

In an encode block, the inputted the PB video signal is converted into the component signal data and the composite-encoded data, then output as the analog video output signals. In the 525/60 mode, setup processing is also carried out in the encode block.
These output data is converted from digital to analog and output from each VIDEO OUTPUT connector on the connector panel (CP-334 board) as an analog component signal and analog composite signal.
The analog composite output signal has three lines. Characters can be superimposed* on one (VIDEO OUTPUT COMPOSITE 3) of the lines.
The analog component output signal has only one line. No characters can be superimposed on the line.
In the encode block, the input PB video signal is also output to the SDI encode block on the SDI-41 board as the digital component signal so that it is used for the SDI output signal.
The digital component video signal for SDI output is multiplexed with 4-channel audio signals by the SDI encode block and converted from parallel to serial. The converted signal is then output from the SDI OUTPUT connectors on the connector panel as the SDI signal.
The SDI output signal has three lines. Characters can be superimposed* on one (SDI OUTPUT 3) of the lines.

*: The characters that are superimposed on the VIDEO OUTPUT COMPOSITE 3 and SDI OUTPUT 3 channels are the same.

Sync/video signal processing system

Reference internal signals for video and audio systems are produced on the VPR-47 board.
The inputted reference video signal from the REF VIDEO connector or the inputted video signal from the analog video input connector (COMPOSITE or COMPONENT Y) is selected on the CP-334 board and sent to the timing generation block on the VPR-47 board.
In the timing generation block, sync and burst signals are separated and extracted from the input video signal.
Sync signals (HD, VD, and CF) are extracted from the SDI signal input to the SDI INPUT connector by the SDI decode block on the SDI-41 board.
On the VPR-47 board, reference internal signals, timing signals (HD, VD, FRAME, CF, GOP, and AUDIO ID), and clocks (for video and audio) synchronized with this reference signal are produced based on the extracted sync signals. These signals and clocks are sent to each board.
The reference signal (SV REF) for a servo system is also produced by the timing generation block on the VPR-47 board and sent to the SS-83 board.

(2) Audio Signal Processing System (CP-278, CP-301, CP-335, APR-40, AU-260, DPR-118, VR-223, and VR-224 Boards)

Recording system

The inputted analog audio signals (CH1 to CH4) from the AUDIO INPUT connectors (on the CP-278 board) are passed through four relay switches on the APR-40 board and A/D-converted into serial digital audio data. The converted signals are then sent to the audio processing block.
Each analog audio signal is also level-controlled before passed through the relay switch, and emphasized after passed through it.
Four relay switches are used to switch longitudinal audio signals (CH1 and CH2) and FM audio signals (CH3 and CH4) in the Betacam PB mode and the analog audio signals (CH1 to CH4) input to the AUDIO INPUT connectors.

The inputted digital audio signals (CH1/2 and CH3/4) from the AUDIO INPUT (AES/EBU) connectors (on the CP-335 board) are sent to the APR-40 board and decoded to serial digital audio data by the AES/EBU decode block. The decoded signals are then sent to the audio processing block. By setting the setup menu, the decoded data can be converted into the internal clock rate by a sample rate conversion block and sent to the audio processing block.
The inputted SDI signal from the SDI INPUT connector is sent to the SDI-41 board and converted from serial to parallel. After that, in the audio receive TBC block, an SDI audio signal is converted into serial digital audio data and extracted a control signal (channel status bit). The serial digital audio data is sent to the audio processing block on the APR-40 board.
In the audio processing block, input signals for recording are selected from a 12-channel input signal consisting of three lines (analog audio, AES/EBU, and SDI audio) described above, and REC gain control, channel mix/mute control, and data delay control are performed in this case.
The audio recording data (four-channel) output from the audio processing block is sent to the ECC encode block on the DPR-118 board.

Betacam SX PB system

The PB audio data that was ECC-decoded by the outer ECC decode block on the DPR-118 board is input through a VAR ×2 process block to the DSP block for audio processing.
In the DSP block, five-field sequence processing (in 525/60 mode only) and JOG/VAR control are carried out. After that, the PB audio data is sent to the audio processing block on the APR-40 board as serial digital audio data.

Analog Betacam PB system

A longitudinal audio (CH1 and CH2) PB signal is sent to the AU-260 board and fed through the PB equalizer circuit and the PB amplifier to the Dolby C noise reduction block for Dolby noise reduction. After that, the PB signal is sent to the APR-40 board as CH1 and CH2 of an analog Betacam PB audio signal.
The C RF signal containing an AFM signal is sent from the DM-89 board to the AU-260 board. The C RF signal is passed through a low-pass filter to extract the AFM signal. After the AFM signal is converted from analog to digital, it is passed through the AFM TBC block and FM-demodulated by the AFM demodulation block. The AFM TBC block corrects a time base.
The demodulated audio signal is sent through the noise reduction block to the APR-40 board as CH3 and CH4 of the analog Betacam PB audio signal.

Output system

In the audio processing block on the APR-40 board, PB/EE signal selection control, PB gain control, monitor output selection, and data delay control are performed. The four-line serial digital audio data for SDI output, line output (analog), line output (AES/EBU), and monitor output is output from this block.
The serial digital audio data for SDI output is sent to the SDI-41 board and converted into the SDI audio signal by the audio transmission TBC block. The converted data is then multiplexed with video data by an SDI encode block. The resultant data is converted from parallel to serial and output from the SDI OUTPUT connector on the connector panel as the SDI signal.
The serial digital audio data for line output (AES/EBU) is encoded to an AES/EBU format by an AES/EBU encode block and output from the AUDIO OUTPUT (AES/EBU) connector (CP-335 board) on the connector panel.
The audio signal data for line output (analog) and monitor output is oversampled by a digital filter and converted from digital to analog. The data is then de-emphasized and output from the connector panel (on the CP-278 and CP-301 boards).
After the audio signal data for monitor output is also de-emphasized, it is sent to the VR-223 board for headphone output. The data is level-controlled on the VR-223 board, and then output.

(3) Digital Signal Processing System (DPR-118 board, DPR-119 board/BKNW-118, and DPR-150 board/BKNW-124)

Recording system

The external input video signals (SDI, component, and composite) that are sent from the SDI-41 board to the DPR-118 board through the VPR-47 board are passed through a frame control block and pre-filter block and SX-encoded (SX-compressed).
The SX encoding (SX compression) is constituted by the BRR (bit rate reduction) encode block and a motion estimation block for motion detection.
The video data (bit stream data in units of GOP) that is SX-encoded by the BRR encode block is sent to the ECC (error correction code) encode block.
The audio signal data for recording is directly sent from the audio processing block on the APR-40 board to the ECC encode block on the DPR-118 board without being compressed.
In the ECC encode block, outer and inner error correction codes are added to the input video data and audio signal data, respectively. Five-field audio control (in 525/60 mode only) and system data recording control containing non-tracking control data are also performed in this case. Each recording data in video and audio systems is multiplexed and sent to the REC driver on the EQ-75 board as REC data (A and B).

Playback system

Betacam SX PB data is sent from the EQ-75 board to the DPR-118 board and fed through the VAR ×2 process block (1/2) to the outer ECC decode block.
In the VAR ×2 process block (1/2), PB data is processed in the preceding stage during only VAR PB operation.
In the outer ECC decode block, outer error correction is performed for audio and video data after non-tracking processing (data rearrangement).
The video data after error correction is sent through the VAR ×2 process block (2/2) to the BRR (bit rate reduction) decode block. The audio data after error correction is sent through the VAR ×2 process block (2/2) to the DSP (digital signal process) block for audio processing.
In the VAR ×2 process block (2/2), the data processing (decimation) for VAR playback is performed for PB data in only the VAR PB mode.
In the BRR decode block, PB video data is SX-decoded to return to an eight-bit digital video signal. This signal is input to the frame control block on the DPR-118 board, and simultaneously sent to the VPR-47 board as the Betacam SX PB video signal.
In the DSP block, five-field sequence processing (in 525/60 mode only) and JOG/VAR control are performed.
The data output from the DSP block is sent to the audio processing block on the APR-40 board as serial digital audio data.

When SDTI (SX) output option BKNW-118 (DPR-119 board) is installed, the video data output from the outer ECC decode block and the audio data output from the VAR ×2 process block (2/2) are sent for feed PB output to the DPR-119 board.

When SDTI-CP output option BKNW-124 (DPR-150 board) is installed, the video data output from the outer ECC decode block and the audio data output from the VAR ×2 process block (2/2) are sent for feed PB output to the DPR-150 board, and the compressed video data output from the BRR Encode block and the audio data output from the audio process block (on the APR-40 board) are sent for the analog Betacam PB or E-to-E output to the same board.

(4) RF System (EQ-75 Board and Drum Assembly)

Recording system

The sent REC data from the DPR-118 board is sent from the REC driver on the EQ-75 board to the upper drum assembly (DR-373 board) as a recording signal through a rotary transformer.
Each channel (A and B) of the recording signal is sent to each REC head through each REC amplifier with the data records on the tape.

Playback system

The PB RF output signal of each PB head in the upper drum assembly is sent to each PB amplifier in the upper drum assembly. Only the PB amplifier output signal of the head that is enabled by a head control timing signal is sent to the EQ-75 board through the rotary transformer.
For the analog Betacam PB operation, RF signals (Y-A, Y-B, C-A, and C-B) are sent to the EQ-75 board and sent through the equalize block to the DM-89 board.
For the Betacam SX PB operation, a maximum of four-line RF signals are sent to the EQ-75 board. These RF signals are passed through the amplifier and equalization circuit in the equalize block and converted from analog to digital. The converted signals are then sent to the inner ECC decode block as PB data. In the inner ECC decode block, viterbi decoding and inner error correction are performed.
The PB data after error correction is sent to the DPR-118 board.

Control system

The control signal of each head (REC, PB, or erase head) in the drum assembly is encoded to MPX data by the MPX encoder on the EQ-75 board and sent through the rotary transformer to the upper drum assembly. The MPX data is decoded to a head control timing signal by the MPX decoder in the upper drum assembly. Each head is controlled by the head control timing signal.

(5) Analog Betacam PB Video System (DM-89, TBC-23A, and TBC-24 Boards)

The RF signals (Y and C) sent from the equalize block on the EQ-75 board are passed through the COS equalization circuit for FM demodulation. The demodulated signals are passed through the nonlinear de-emphasis processing circuit and noise canceller circuit, and the signals are sent to the TBC-24 board. Additionally, the DM-89 board detects a drop out. A C RF signal contains the analog Betacam PB audio signal and the AFM signal for CH3 and CH4. The AFM signal is sent from the DM-89 board to the AU-260 board.
The FM-demodulated video signal on the DM-89 board is converted from analog to digital on the TBC-24 board and delay-processed for timing adjustment. The resultant signal is sent to the TBC-23A board. On the TBC-24 board, a sync signal is extracted from a video signal, and memory (TBC-23A board) control clocks and timing pulses are generated based on the sync signal. The TBC-24 board also corrects an impact error.
By the video data processing block and line memory, the video signal data sent to the TBC-23A board performs time-base correction, search picture processing, and CTDM expansion according to each timing pulse generated on the TBC-24 board.
The Y and C (R-Y/B-Y) signal data read from the line memory is dropout-compensated by the DOC block and noise-reduced by an ENR block. Moreover, the R-Y/B-Y signal data is LCC (line crawl cancel)-processed and sent to the MPX block.
The Y, R-Y, and B-Y signals input to the MPX block are converted into a D1 format. The converted signals are then passed through a setup remove block and sent to the VPR-47 board as an analog Betacam PB video signal.
In the setup remove block, setup level is removed for an NTSC system (525/60 mode) only.

(6) System Control System and Servo System (SS-83 Board)

System control and servo control are performed on the SS-83 board. Two main CPUs (SYS1 CPU and SYS2 CPU) for system control and one main CPU (servo CPU) for servo control are mounted on the SS-83 board. Moreover, drum MPU and DT MPU are mounted on the SS-83 board.

System control

SYS1 CPU uses RISC CPU, and the operating clock is 40 MHz.
SYS1 CPU performs the following processing.

- Remote interface processing
  (REMOTE1-IN/OUT (9-pin), PARALLEL I/O (50-pin), RS-232C, and VIDEO CONTROL connectors)
- Processes communications with KY MPU on KY-438 board.
  (for JOG/Search dial I/F and Lower control panel I/F)
- Processes communications with FP MPU on FP-117 board.
  (for Sub control panel I/F and Upper control panel I/F)
- Processes communications with SYS2 CPU.
- Controls character superimposition.

Like SYS1 CPU, SYS2 CPU also uses RISC CPU. The operating clock is 40 MHz.
SYS2 CPU performs the following processing.

- Controls LSIs, DSP, and PIOs on VPR-47, APR-40, DEC-110, SDI-41, DPR-118, and DPR-119 (BKNW-118) boards.
- Processes communications with MPUs on EQ-75, SDI-41, DM-89, and TBC-23A boards.
- Controls the fluorescent (FL) indicator (audio level meter).
- Processes communications with SYS1 CPU.
- Processes communications with servo CPU.
- Time code (TC) processing
- Processes communications with SYS3 CPU on DPR-150 (BKNW-124) board.

Servo control

Servo CPU uses 16-bit CPU. The operating clock is 20 MHz.
Servo CPU performs the following processing.

- Controls various motor drivers (capstan, reels, and drum).
- Detects each FG signal, PG signal, and sensor state.
- Generates each mode signal and timing pulse corresponding to the tape transport state.
- Controls the addresses of each JOG memory on the VPR-47 board and the DPR-118 board.
- Processes communications with drum MPU (head select and flying erase control MPU).
- Processes communications with DT MPU (bimorph (DT) heads control MPU for analog Betacam PB operation).

Each communication between SYS1 CPU and SYS2 CPU, SYS2 CPU and servo CPU, and servo CPU and DT MPU is performed via the dual port RAM.

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(7) SDTI (SX) Output System (Option) (DPR-119 Board/BKNW-118)

SDTI (SX) output processing is performed on the DPR-119 board (BKNW-118).

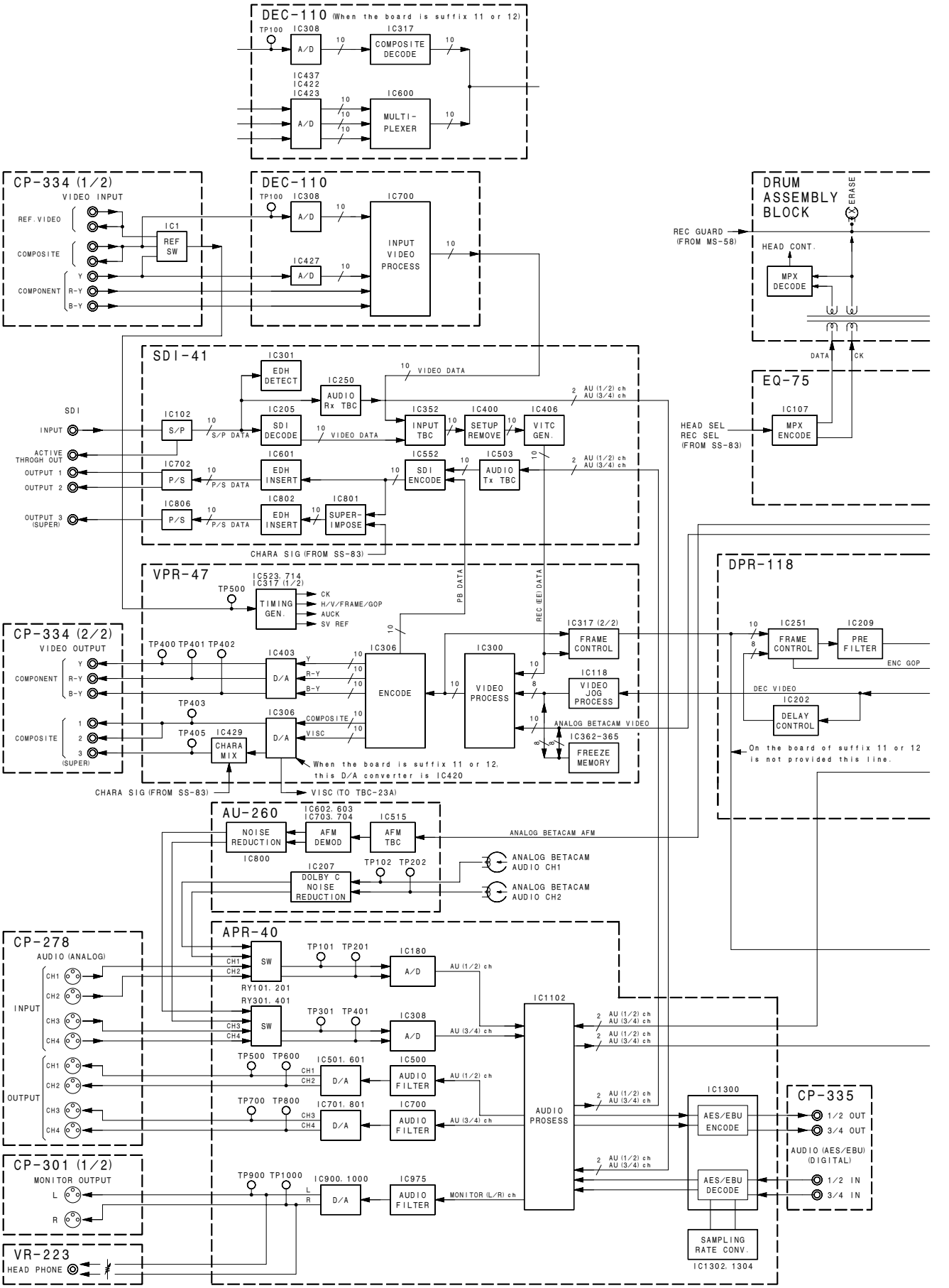
The video signal data and audio signal data that are output from the DPR-118 board as SDTI (SX) output signal data are packed by the video and audio data pack blocks on the DPR-119 board.
The packed signal data is passed through an SDTI (SX) interface block and converted from parallel to serial. The converted signal data is then output from the connector panel as the SDTI (SX) output signal.

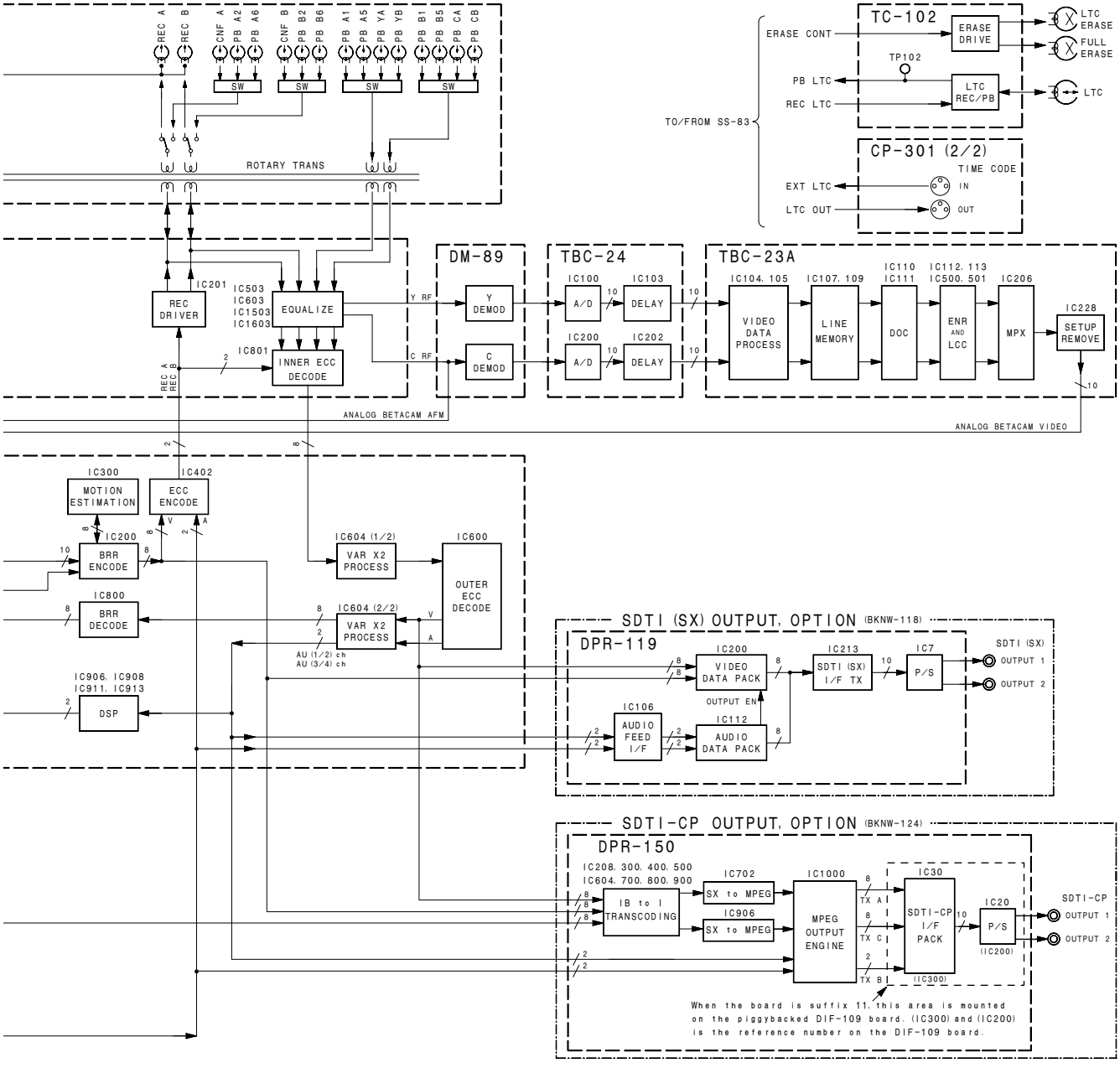
(8) SDTI-CP Output System (Option) (DPR-150 Board/BKNW-124)

SDTI-CP output processing is performed on the DPR-150 board (BKNW-124).

The video signal data output from the DPR-118 board as SDTI-CP output signal data is performed a transformation coding (transforms a IB stream into an I only stream) by the transcode block. The video signal data is converted to MPEG stream by SX-to-MPEG block. The converted video signal data is send to the SDTI-CP pack block.
The audio signal data is send to the SDTI-CP pack block through the audio I/F block.
The video signal data and audio signal data input to the SDTI-CP pack block are packed to the SDTI-CP format. The packed signal data is then output from the connector panel as the SDTI-CP output signal after converting from parallel to serial.

On the DPR-150 board, SYS3 CPU is mounted for controlling.
SYS3 CPU used RISC CPU, and the operating clock is 40 MHz.
Communication between SYS3 CPU and SYS2 CPU (SS-83 board) is performed via the inner dual port RAM of SYS3 CPU.

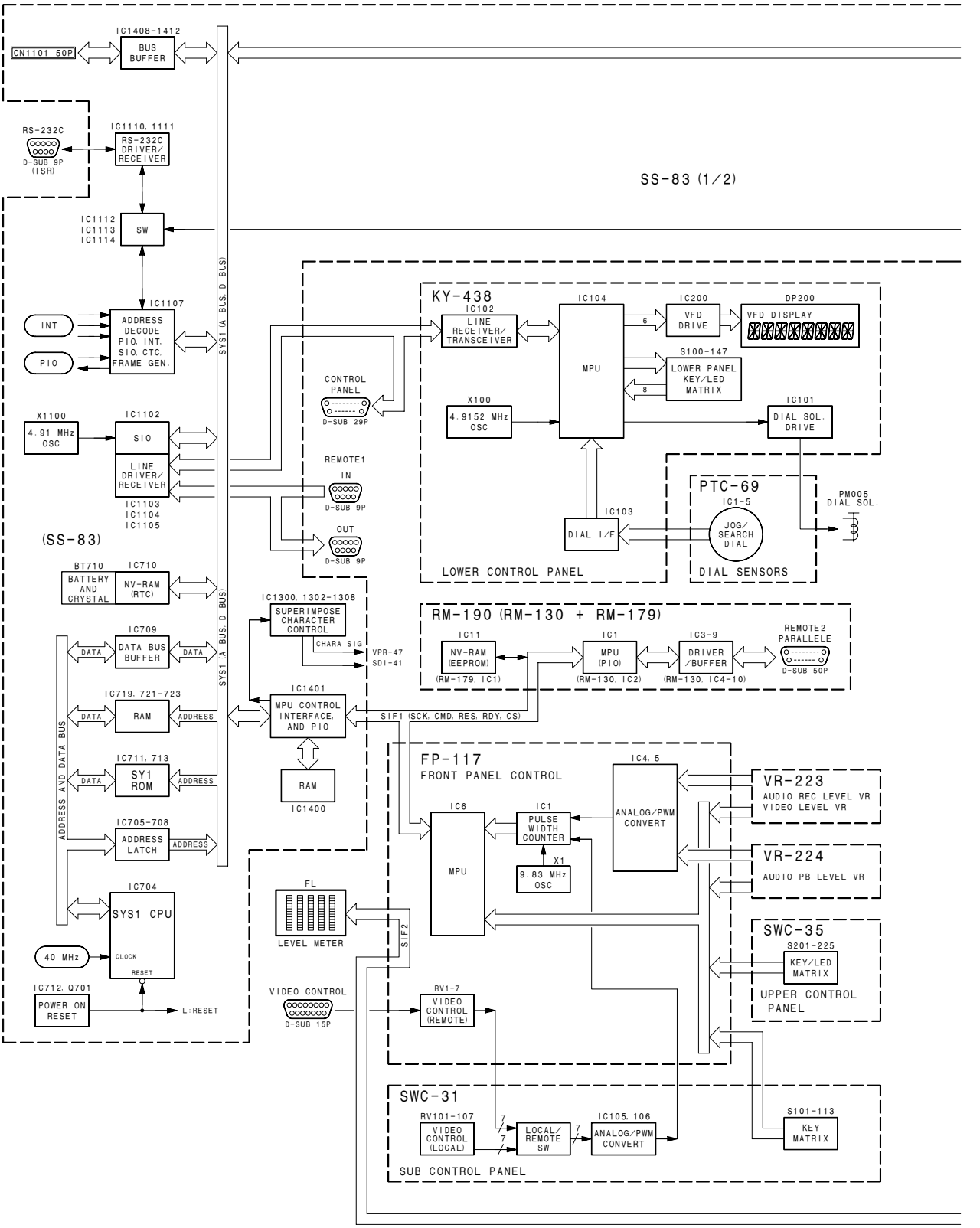

DEC-110 (When the board is suffix 11 or 12)
TP100
IC308
A/D
IC317
COMPOSITE DECODE
IC437
IC422
IC423
IC600
MULTI-PLEXER
CP-334 (1/2)
VIDEO INPUT
REF.VIDEO
COMPOSITE
COMPONENT
Y
R-Y
B-Y
IC1
REF SW
IC700
INPUT VIDEO PROCESS
IC427
DRUM ASSEMBLY BLOCK
ERASE
REC GUARD (FROM MS-58)
HEAD CONT.
MPX DECODE
DATA
CK
EQ-75
IC107
MPX ENCODE
HEAD SEL
REC SEL (FROM SS-83)
SDI-41
IC301
EDH DETECT
IC250
AUDIO Rx TBC
VIDEO DATA
AU (1/2) ch
AU (3/4) ch
SDI
INPUT
IC102
S/P
S/P DATA
IC205
SDI DECODE
IC352
INPUT TBC
IC400
SETUP REMOVE
IC406
VITC GEN.
ACTIVE THROGH OUT
OUTPUT 1
OUTPUT 2
IC702
P/S
P/S DATA
IC601
EDH INSERT
IC552
SDI ENCODE
IC503
AUDIO Tx TBC
OUTPUT 3 (SUPER)
IC806
IC802
IC801
SUPER-IMPOSE
CHARA SIG (FROM SS-83)
VPR-47
IC523, 714
IC317 (1/2)
TP500
TIMING GEN.
CK
H/V/FRAME/GOP
AUCK
SV REF
PB DATA
REC (EE) DATA
IC317 (2/2)
FRAME CONTROL
DPR-118
IC251
IC209
PRE FILTER
ENC GOP
DEC VIDEO
IC202
DELAY CONTROL
On the board of suffix 11 or 12 is not provided this line.
CP-334 (2/2)
VIDEO OUTPUT
TP400 TP401 TP402
IC403
D/A
IC306
ENCODE
IC300
VIDEO PROCESS
IC118
VIDEO JOG PROCESS
TP403
TP405
IC429
CHARA MIX
COMPOSITE
VISC
ANALOG BETACAM VIDEO
IC362-365
FREEZE MEMORY
When the board is suffix 11 or 12, this D/A converter is IC420
VISC (TO TBC-23A)
AU-260
IC602, 603
IC703, 704
IC515
NOISE REDUCTION
IC800
AFM DEMOD
AFM TBC
ANALOG BETACAM AFM
IC207
DOLBY C NOISE REDUCTION
TP102 TP202
ANALOG BETACAM AUDIO CH1
ANALOG BETACAM AUDIO CH2
APR-40
CP-278
AUDIO (ANALOG)
INPUT
OUTPUT
CH1
CH2
CH3
CH4
SW
RY101, 201
RY301, 401
TP101 TP201
TP301 TP401
IC180
IC308
A/D
AU (1/2) ch
AU (3/4) ch
IC1102
AUDIO PROSESS
TP500 TP600
TP700 TP800
IC501, 601
IC701, 801
D/A
IC500
IC700
AUDIO FILTER
IC1300
AES/EBU ENCODE
AES/EBU DECODE
CP-335
1/2 OUT
3/4 OUT
AUDIO (AES/EBU) (DIGITAL)
1/2 IN
3/4 IN
CP-301 (1/2)
MONITOR OUTPUT
L
R
TP900 TP1000
IC900, 1000
IC975
MONITOR (L/R) ch
SAMPLING RATE CONV.
IC1302, 1304
VR-223
HEAD PHONE

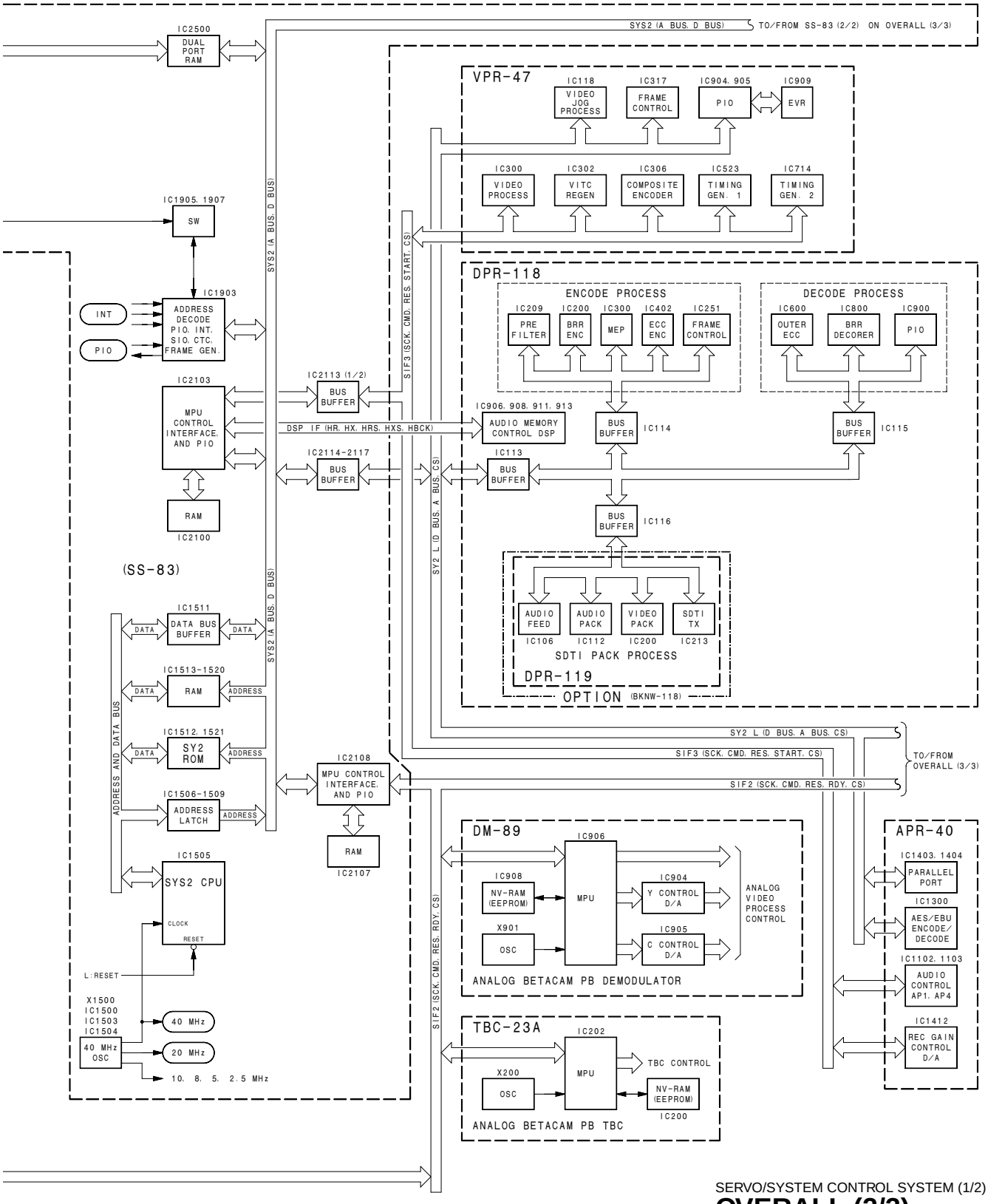


SIGNAL PROCESSING SYSTEM

OVERALL (1/3)

DNW-A75/A75P

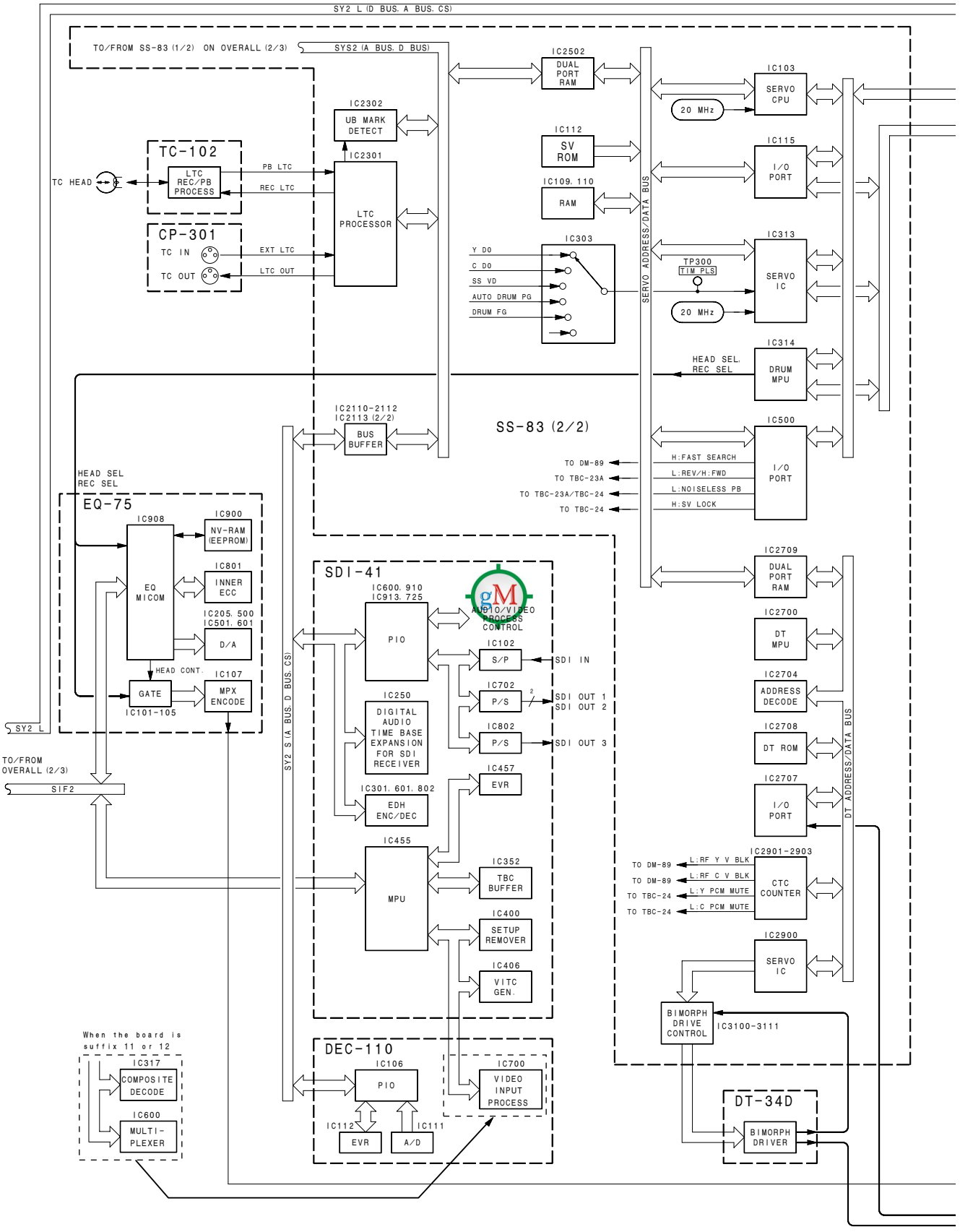

IC1408-1412
BUS BUFFER
CN1101 50P
RS-232C
D-SUB 9P (ISR)
IC1110, 1111
RS-232C DRIVER/ RECEIVER
IC1112 IC1113 IC1114
SW
SS-83 (1/2)
IC1107
ADDRESS DECODE PIO. INT. SIO. CTC. FRAME GEN.
INT
PIO
SYS1 (A BUS, D BUS)
KY-438
IC102
LINE RECEIVER/ TRANSCEIVER
IC104
MPU
IC200
VFD DRIVE
DP200
VFD DISPLAY
S100-147
LOWER PANEL KEY/LED MATRIX
X100
4.9152 MHz OSC
IC101
DIAL SOL. DRIVE
CONTROL PANEL
D-SUB 29P
X1100
4.91 MHz OSC
IC1102
SIO
LINE DRIVER/ RECEIVER
IC1103 IC1104 IC1105
REMOTE1 IN
D-SUB 9P
OUT
D-SUB 9P
(SS-83)
PTC-69
IC1-5
JOG/ SEARCH DIAL
PM005 DIAL SOL.
IC103
DIAL I/F
LOWER CONTROL PANEL
DIAL SENSORS
BT710
BATTERY AND CRYSTAL
IC710
NV-RAM (RTC)
IC1300, 1302-1308
SUPERIMPOSE CHARACTER CONTROL
CHARA SIG
VPR-47
SDI-41
RM-190 (RM-130 + RM-179)
IC11
NV-RAM (EEPROM)
(RM-179, IC1)
IC1
MPU (PIO)
(RM-130, IC2)
IC3-9
DRIVER /BUFFER
(RM-130, IC4-10)
REMOTE2 PARALLELE
D-SUB 50P
IC709
DATA BUS BUFFER
DATA
IC719, 721-723
RAM
ADDRESS
IC1401
MPU CONTROL INTERFACE, AND PIO
SIF1 (SCK, CMD, RES, RDY, CS)
RAM
IC1400
IC711, 713
SY1 ROM
ADDRESS AND DATA BUS
IC705-708
ADDRESS LATCH
FP-117
FRONT PANEL CONTROL
IC4, 5
ANALOG/PWM CONVERT
IC6
MPU
IC1
PULSE WIDTH COUNTER
X1
9.83 MHz OSC
VR-223
AUDIO REC LEVEL VR
VIDEO LEVEL VR
VR-224
AUDIO PB LEVEL VR
FL
LEVEL METER
SIF2
SWC-35
S201-225
KEY/LED MATRIX
UPPER CONTROL PANEL
IC704
SYS1 CPU
40 MHz
CLOCK
RESET
IC712, Q701
POWER ON RESET
L:RESET
VIDEO CONTROL
D-SUB 15P
RV1-7
VIDEO CONTROL (REMOTE)
SWC-31
RV101-107
VIDEO CONTROL (LOCAL)
LOCAL/ REMOTE SW
IC105, 106
ANALOG/PWM CONVERT
S101-113
KEY MATRIX
SUB CONTROL PANEL

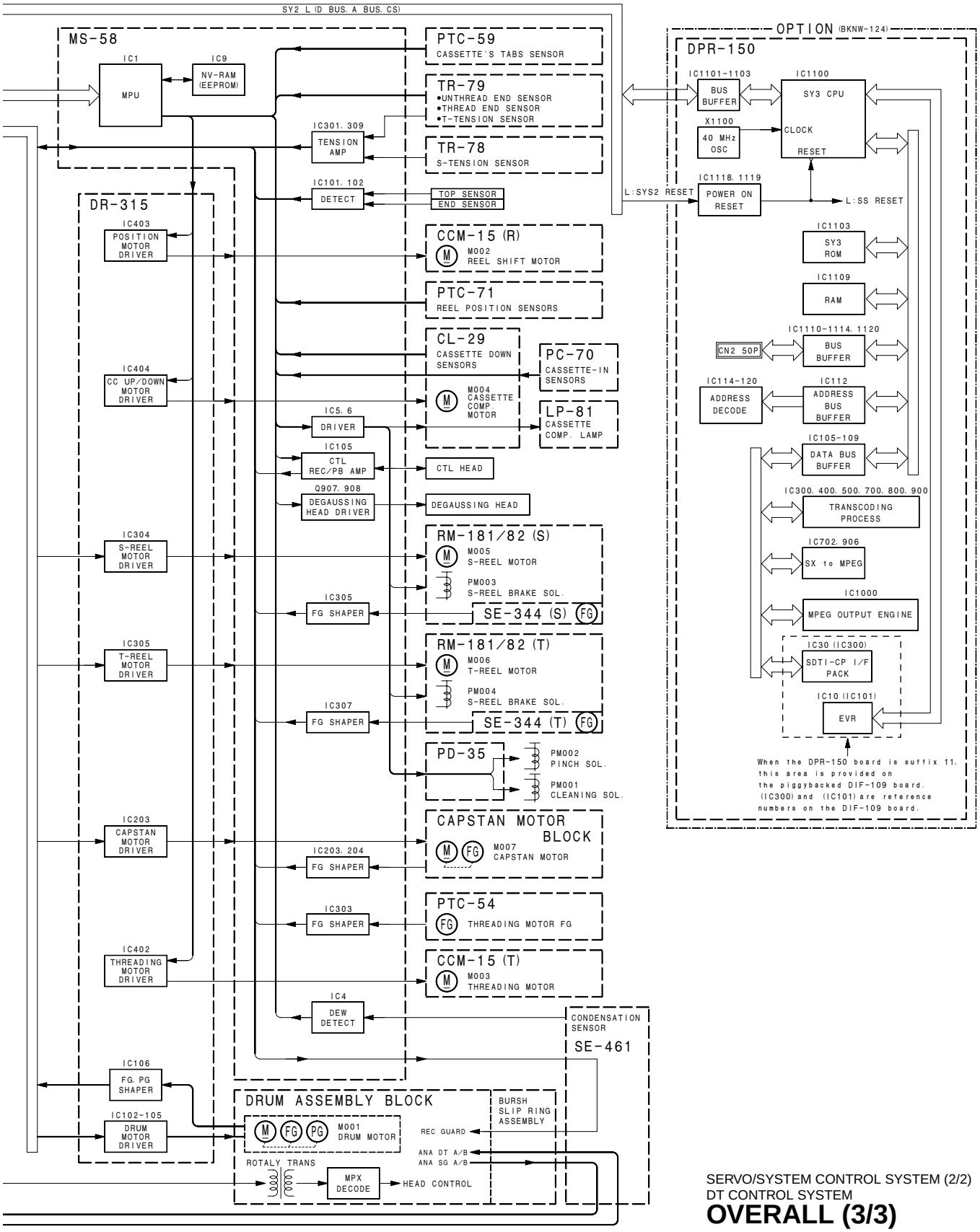


SERVO/SYSTEM CONTROL SYSTEM (1/2)

OVERALL (2/3)

DNW-A75/A75P


SY2 L (D BUS, A BUS, CS)
TO/FROM SS-83 (1/2) ON OVERALL (2/3)
SYS2 (A BUS, D BUS)
IC2502
DUAL PORT RAM
IC103
SERVO CPU
20 MHz
IC2302
UB MARK DETECT
IC112
SV ROM
IC115
I/O PORT
TC-102
TC HEAD
LTC REC/PB PROCESS
PB LTC
REC LTC
IC2301
LTC PROCESSOR
IC109, 110
RAM
SERVO ADDRESS/DATA BUS
CP-301
TC IN
TC OUT
EXT LTC
LTC OUT
IC303
Y DO
C DO
SS VD
AUTO DRUM PG
DRUM FG
IC313
SERVO IC
TP300
TIM PLS
20 MHz
IC314
DRUM MPU
HEAD SEL.
REC SEL
IC2110-2112
IC2113 (2/2)
BUS BUFFER
SS-83 (2/2)
IC500
I/O PORT
TO DM-89
TO TBC-23A
TO TBC-23A/TBC-24
TO TBC-24
H:FAST SEARCH
L:REV/H:FWD
L:NOISELESS PB
H:SV LOCK
HEAD SEL
REC SEL
EQ-75
IC908
EQ MICOM
IC900
NV-RAM (EEPROM)
IC801
INNER ECC
IC205, 500
IC501, 601
D/A
HEAD CONT.
IC107
GATE
MPX ENCODE
IC101-105
SY2 L
TO/FROM OVERALL (2/3)
SIF2
SDI-41
IC600, 910
IC913, 725
PIO
AUDIO/VIDEO PROCESS CONTROL
IC102
S/P
SDI IN
IC702
P/S
SDI OUT 1
SDI OUT 2
IC802
P/S
SDI OUT 3
IC250
DIGITAL AUDIO TIME BASE EXPANSION FOR SDI RECEIVER
IC457
EVR
IC301, 601, 802
EDH ENC/DEC
IC455
MPU
IC352
TBC BUFFER
IC400
SETUP REMOVER
IC406
VITC GEN.
SY2 S (A BUS, D BUS, CS)
IC2709
DUAL PORT RAM
IC2700
DT MPU
IC2704
ADDRESS DECODE
IC2708
DT ROM
IC2707
I/O PORT
DT ADDRESS/DATA BUS
IC2901-2903
CTC COUNTER
TO DM-89
TO DM-89
TO TBC-24
TO TBC-24
L:RF Y V BLK
L:RF C V BLK
L:Y PCM MUTE
L:C PCM MUTE
IC2900
SERVO IC
BIMORPH DRIVE CONTROL
IC3100-3111
When the board is suffix 11 or 12
IC317
COMPOSITE DECODE
IC600
MULTI-PLEXER
DEC-110
IC106
PIO
IC700
VIDEO INPUT PROCESS
IC112
EVR
IC111
A/D
DT-34D
BIMORPH DRIVER



SERVO/SYSTEM CONTROL SYSTEM (2/2)
DT CONTROL SYSTEM

OVERALL (3/3)

DNW-A75/A75P

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For the U.S.A. and Canada

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

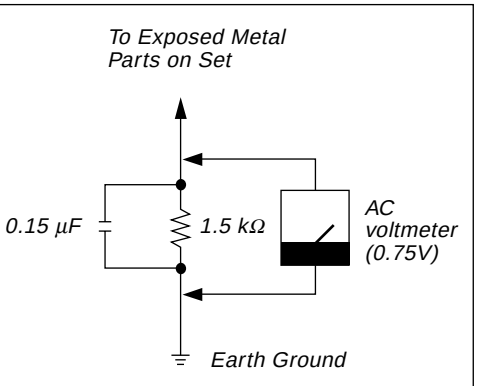

Fig A. Using an AC voltmeter to check AC leakage.

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DNW-A75P (SY) E
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